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ABSTRACT

The Comprehensive Communication Curriculum is designed for teaching basic communication skills to severely or profoundly retarded, physically handicapped students. An introductory section mentions the purpose of five major program components: caregiver interview, identification of child's wants and needs, training the child to request wants and needs, training to initiate interaction and request wants and needs, and environmental manipulations to facilitate spontaneous requests. A section on parent involvement and the initial assessment contains a sample caregiver interview and examples illustrating interpretation of the caregiver interview. Procedures for identifying reinforcers via environmental manipulation are the focus of the section on identification of wants and needs. Request training is discussed in another section in terms of goal and rationale, three decisions in request training, and request training objectives and procedures. The goals and rationale, description, procedures, criterion, and generalization information are offered for training in requesting more, requesting through choice, training the child to initiate communication, and manipulating the environment to facilitate spontaneous use. Appended materials include a report on facilitator training, a sample caregiver interview and teacher questionnaire, blank data sheets, guidelines for planning and managing a communication board, guidelines for selecting a primary communication mode, and a review of response development and data collection. (SB)

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Comprehensive Communication Curriculum Guide

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CCC
Comprehensive
Communication
Curriculum

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PREFACE

This curriculum is intended primarily for students who are severely and profoundly retarded. These students may have little or no existing communication, and may have physical handicaps that restrict their potential communication responses. The flexibility of this curriculum is ideal for developing individualized programming for these students. However, the concepts upon which the curriculum is based are applicable to any student.

This curriculum focuses on the training of basic communication skills. The training of traditional language-related skills, such as vocal imitation, language comprehension, etc., should supplement the training objectives presented in this curriculum. In addition it is assumed that teachers utlizing the curriculum will already have had a background in behavioral analysis and behavior modification, and that such principles will be applied for all response training (see Appendix F).

Finally, this curriculum represents an integration of ideas and procedures developed by our own staff, as well as a number of additional sources including the following:

McLean, J., and Snyder-McLean, L., A Transactional Approach to Early Language Training Columbus: Charles E. Merrill, 1978.

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INTRODUCTION

CCC PROGRAM INTRODUCTION AND OVERVIEW

INTRODUCTION

The Comprehensive Communication Curriculum (CCC) is a communication training program which has been developed in response to frustrations expressed by many teachers and parents of severely multiply handicapped children. Language training efforts with this population in the past have had little success. It has been our observation that these attempts often fail because the child is being taught formal symbolic language systems (such as speech, manual sign, bliss symbols, etc.), without being taught basic communication skills. Communication programs have traditionally required that students learn several prerequisite skills before beginning actual communication training. These prerequisites have included motor and vocal imitation, attending behavior, vocabulary comprehension, and so-on. In the CCC Program these skills, while important, are considered "facilitators" (See Appendix A). They are not prerequisite to learning communication skills, but rather, they enhance the learning communicative behaviors by facilitating response development.

It is the underlying assumption of the CCC Program that the acquisition of basic communication skills is an essential prerequisite to the successful acquisition of functional linguistic skills. In the CCC Program, which has been designed specifically for use with the severely to profoundly retarded, physically handicapped student, "basic communication skills" are defined as the ability to express basic wants and needs, and to spontaneously initiate a communication interaction. This communication may be accomplished either symbolically (e.g., by using words or signs), or non-symbolically (e.g., by using natural gestures and movements). Figure 1 represents an important conceptual feature of the CCC Program. That is, there are many ways to communicate. Only one of them is through symbolic language. Severely handicapped children who are unable to learn complex systems of symbolic language, can still be trained to communicate.

All children, no matter how young, or how severely impaired, communicate in some way: by crying, facial expressions, gestures, etc. The normal human infant communicates from the moment of birth by crying to express pain or discomfort. The infant continues to develop effective communication skills including various combinations of eye gaze, pointing, and vocalizations throughout the first year of life. It is not until twelve or fifteen months of age that the infant really begins to use speech and symbolic language for communication.

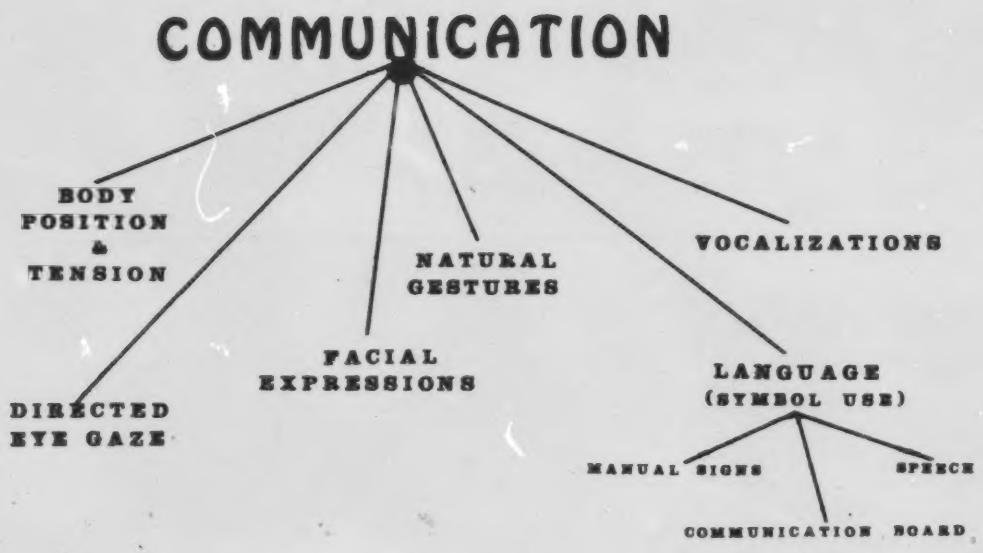

Figure 1:

Types of Communication

Thus, the normal child has had more than a year of experience developing communication skills before he or she even begins to develop a conventional symbol system. In the same way, it is unreasonable to expect the severely multiply handicapped child to learn sumbolic language before the child has learned to communicate. Nearly all severely multiply handicapped children, whether or not they learn a formal system of symbolic language, can learn to communicate their basic wants and needs. Many of these children already have some form of communicating, as mentioned above. The purpose of the CCC Program is tc make that communication more efficient and systematic, and more under the child's own control.

Another important feature of the CCC Program is its focus upon functional use of communication within the natural settings and events of the child's daily life. Because of this focus, the child's family and home are seen as key elements to the success of communication training.

Two manuals which accompany this curriculum deal in various ways with parent involvement in the classroom. The Teacher's Guide to Parent Involvement discusses a "hierarchy of services" which provides a framework within which to evaluate and plan parent involvement in the classroom. The Parent's Guide provides parents with guidelines for communication training in the home, as well as a list of resources for parents of handicapped children.

Because of the response limitations of severely multiply handicapped children, formal assessment tools, such as standardized tests, are often of limited use in evaluating these children's current and potential communication skills. In the CCC Program, parents or primary caregivers, rather than standardized test scores are considered to be the best source of initial assessment information regarding the child. A Caregiver Interview, which is a personal interview with the child's parents, provides an initial link between the classroom and the parents. Parent reports regarding the handicapped child's current communicative skills are viewed as crucial information for the process of program planning in the classroom. In addition to providing important information, the parents and the home setting are seen as essential to both the selection of appropriate training goals, and to the process of training communication skills.

KEY ASSUMPTIONS OF THE CCC PROGRAM

The following is a list and brief explanation of several key points and assumptions of the CCC Program:

1. Any child can learn to communicate.

   The CCC Program has no prerequisites. The program is appropriate for any handicapped child regardless of the severity of his or her impairments.

2. Severely handicapped children must learn to communicate basic wants and needs in order for language behaviors to be functional.

   Many handicapped children are taught specific language behaviors, such as signed or spoken labels (e.g., naming objects). Often, however, these behaviors are not communicatively functional for the handicapped child because he cannot use them for anything in his daily life. Consequently, the language behaviors are not readily generalized and maintained. In the CCC Program children learn that communicative behaviors can be used to control their environment and obtain the things they want and need.

3. Children are most likely to learn those communicative behaviors which express basic wants and needs.

   Children must have a "communicative need", i.e., a reason or purpose for communicating. Thus, the first goal of the CCC Program is the identification of the things the child enjoys and/or needs from his daily environment. Students are then trained to request those wants and needs. (In this curriculum, wants and needs are also referred to as "high-preference reinforcers".)

4. Children must learn to initiate communicative interaction.

   Communicative behaviors are of little use to the handicapped child if they cannot be spontaneously used to initiate communicative interaction. Thus, in order to facilitate spontaneous use of communicative behavior, the CCC Program trains the child to signal the teacher or caregiver for attention, and to recognize those situations in which there is a communicative need.

5. Children are most likely to communicate in natural situations, to persons with whom they are most familiar.

   The child's home and family are viewed as essential elements of the successful communication training program, with regard to initial assessment, as well as program planning and implementation.

MAJOR COMPONENTS OF THE CCC PROGRAM

There are five major components and goals of the CCC Program:

1. CAREGIVER INTERVIEW

Purpose: To determine what communicative behaviors the child already possessess: i.e., to describe what the child already attempts to communicate about in his or her home environment, and what behaviors the child uses in these communicative situations. The Caregiver Interview focuses on the home and family, and provides the initial link between the teacher and the parents.

2. IDENTIFICATION OF WANTS AND NEEDS

Purpose: To determine the child's high-preference (reinforcing) items, foods, persons and activities. These high-preference items will then be used as the things the child is trained to communicate about.

3. TRAINING THE CHILD TO REQUEST WANTS AND NEEDS

Purpose: To teach basic requesting behaviors which will enable the child to "ask" (either symbolically or non-symbolically) for those high-preference items and activities already identified. The appropriate "Request" training objective is determined by assessing the child's current and potential communicative behaviors through the Caregiver Interview, Teacher Questionnaire, and direct observations of the child. There are four request training objectives: REQUESTING MORE, REQUESTING THROUGH CHOICE, REQUESTING THROUGH PICTURE COMMUNICATION BOARD, AND REQUESTING THROUGH SPEECH OR SIGN. The goal and rationale for each of these objectives, as well as suggested training procedures, are presented in the "Request Training" section of this manual.

4. TRAINING TO INITIATE INTERACTION AND REQUEST WANTS AND NEEDS

Purpose: To train the use of an audible attention signal which can be used by the child to obtain attention from caregivers in order to communicate a request. The multiply handicapped child must have some way of signalling for attention in order to initiate a communicative interaction. Only then can communicative behaviors be used spontaneously.

5. ENVIRONMENTAL MANIPULATIONS TO FACILITATE SPONTANEOUS REQUESTS

Purpose: To manipulate the child's environment in such a way as to facilitate the spontaneous use of communicative behaviors in real communication situations. Once the child has learned to request and to initiate communication, the child's daily environment and activities are arranged in such a way as to maximize opportunities for spontaneous use of those behaviors.

Each of these components is described in the curriculum which follows. The goal, description, and rationale of each of the objectives is presented, followed by suggested teaching procedures. Examples of procedures and target behaviors are also provided.

CURRICULUM SEQUENCE

Progression through the curriculum is described briefly as follows: The teacher begins the assessment process by contacting the child's parents and filling out the CAREGIVER INTERVIEW. For the child who initially seems to have very few high-preference objects or activities in his daily life, the primary objective becomes IDENTIFICATION OF WANTS AND NEEDS. Thus, for the child who is "difficult to reinforce" or who "doesn't like anything" this must be the first objective.

Once at least one strong reinforcer (or "high-preference items as they are called in this curriculum) has been identified, REQUEST TRAINING can begin. No matter what form of request is learned, whether symbolic or non-symbolic, the primary goal of the CCC Program is that children, in some way, request the things they want from their daily environment.

When the child has learned to make request in any form, he is then taught to signal attention from the teacher or caregiver in order to INITIATE INTERACTION.

After the child has learned to request the desired object or activity, and to initiate communication, it is important to arrange the environment and daily activities in such a way as to FACILITATE SPONTANEOUS REQUESTS.

PARENTS
and
ASSESSMENT

PARENT INVOLVEMENT AND INITIAL ASSESSMENT

PARENTAL INVOLVEMENT

The CCC Program is strongly committed to the involvement of parents in the educational process of the handicapped child. The two manuals which accompany this curriculum guide, Teacher's Guide to Family Involvement and Parent's Guide to Classroom Involvement, Communication Training, and Resources, are designed to facilitate family involvement.

An especially important aspect of parent involvement is in the communication assessment process. A basic assumption of this program is that no one knows the handicapped student as well as the parents or the primary caregiver. While a great deal of information may be gained by direct testing and teacher observations, parents are often the best single source of information regarding their severely handicapped child. Due to the extreme response limitations of most severely handicapped students, formal assessment tools, such as standardized tests, are often of little use in evaluating the student's current and potential communication skills. Because communication is a social behavior, it should come as no surprise that those persons who have the closest relationship with a student are usually best qualified to assess that student's communication skills. This in no way suggests that teachers and other professionals can not contribute important information regarding students' communication skills, but rather, that the teacher should utilize the one-to-one and very close relationship that often exists between the child and his or her parents.

The Caregiver Interview (found in Appendix B) has been designed to assist the teacher in using parents' input to appropriate communication training goals. The selection of CCC communication goals and training strategies will depend upon the teacher's ability to identify the student's high-preference wants and needs at home (as well as in the classroom), and the ways students express those wants and needs to their parents.

While most parents will demonstrate enthusiasm and readily become involved in the assessment process and other classroom activities, some parents may be reluctant. To facilitate the parents' involvement in the classroom, and to begin the initial stages of an active family program, the following suggestions are presented. A detailed discussion of these strategies is presented under the "Planning Strategies" section of the Teacher's Guide to Family Involvement.

1. Initial Contact Letter. Two or three weeks prior to the beginning of school the teacher should send each of the families involved in the classroom a letter of introduction. In addition to introducing herself, the classroom staff, and plans for the coming year, the letter should invite family members to a parent meeting.

2. Follow-up Telephone Call. Two or three days prior to the parent meeting, call each family to remind them of the meeting, and encourage them to attend.

3. Initial Group Meeting. During the first week of school a group meeting for parents is recommended. The purpose of this meeting is twofold: first, the meeting can serve a social function that will begin to develop the group cohesiveness necessary for good group interaction. Second, the meeting should function as the beginning of the family's involvement in the assessment process. The teacher should go over the Caregiver Interview in some detail, providing copies for parents to make notes on, and to take home for further consideration. At the end of the meeting make an appointment with each parent to meet in the home (preferably) or the classroom to discuss each of the items on the interview.

4. Individual Parent-Teacher Meeting and Caregiver Interview. Whenever possible, the teacher should make arrangements to do the Caregiver Interview in the student's home. Parents are often more comfortable on their "own turf". A home-visit also provides an opportunity for the teacher to observe the child in his or her own familiar environment.

5. Parent Involvement in Training, Generalization, and Maintenance of Communicative Behavior. As training programs are developed, parents will be involved in those programs to whatever extent is reasonable for each family.

ASSESSMENT: THE CAREGIVER INTERVIEW AND TEACHER QUESTIONNAIRE

In addition to the Caregiver Interview, the teacher will fill out the Teacher Questionnaire (also found in Appendix B). This questionnaire asks many of the same kinds of questions as does the Caregiver Interview, but assesses the student's communication behaviors in the classroom rather than the home. The teacher should anticipate that there will be discrepancies when comparing the information provided by the two forms. In a few cases this discrepancy may be due to inaccurate observations on the part of either the teacher or the parent. In most cases, however, these discrepancies simply reflect real differences in students' behaviors at home and in the classroom. As discussed above, the severely handicapped child and his or her parents have had many years of close, one-to-one interaction, which may well have developed behaviors and interactions patterns that are very different from those observed in the classroom. It is extremely important that teachers not be defensive or judgmental in response to parents' claims regarding their child's behaviors and abilities. The teacher as a professional must view the parents as an important information resource in making decisions about initial communication training goals.

To be most effective, the Caregiver Interview must be completed with the parents and teacher discussing each question in detail. Teachers are

reminded that it is an interview, not just a questionnaire to be filled out. Parents may not understand the intent of certain questions, or they may answer a question too briefly. In either case, valuable information may be missed if a discussion does not follow up their answers.

It is important that teachers use good interviewing techniques. Questions should not be simply read to parents, but should be incorporated into a conversational style which attempts to elicit maximum participation. If the teacher finds that she is doing most of the talking, then the goal of the interview is not being met. Teachers should fill out the Caregiver Interview form during the interview, rather than completing the form later from memory.

The major purpose of the Caregiver Interview is to provide information regarding the following:

1. High-preference items and activities. It identifies those things in the child's home environment which are "high-preference reinforcers", i.e., those objects, foods, activities, and people which the child wants and enjoys most.

2. Current and Potential Communicative Behaviors. It also identifies those behaviors which the child already uses to communicate. This information, together with classroom observations and input from other professionals, provides suggestions as to what the child's response potential is.

As will be discussed in subsequent sections of this manual, it is this information which enables the teacher to select the appropriate objective with which to begin communication training.

Sample Caregiver Interview

The following is a completed sample Caregiver Interview which demonstrates the kinds of information the questions are intended to elicit. As teachers read through this sample Caregiver Interview they will notice a great deal of redundancy. This is done purposely in an attempt to obtain reliable information regarding communicative behaviors.

CCC CAREGIVER INTERVIEW

Child's Name SANDY SMITH Date 9/4/81

Age 8 YEARS Information Given By MRS. ROBERT SMITH

Relationship to Child MOTHER

General Health

What medications does your child receive?	When is it given?	How does it affect your child?
1. PHENOBARBITOL	1. MORNING & NIGHT	1. MAKES HER SLEEPY
2.	2.	2.
3.	3.	3.

Does your child have any of these health problems?	YES	NO		How does this affect your child?
Allergies	X		To what? DAIRY PRODUCTS	MAKES HER CONGESTED
Seizures	X		How frequently? 1/2-3 WEEKS	SLEEPS AFTER SEIZURE
Other chronic problems EAR INFECTIONS	X		How frequently? 2-3 EACH WINTER	CRIES, RUNS TEMPERATURE

What seems to trigger your child's seizures?

Physical Condition

Your child chews: Normally (With some difficulty) With great difficulty

Your child swallows: Normally (With some difficulty) With great difficulty

Your child sucks: Normally (With some difficulty) With great difficulty

Describe your child's feeding program or special diets: CAN'T EAT CHUNKY FOOD. MOST FOODS NEED TO BE SOFT OR PUREED

How would you describe your child's vision? Normal Mild Impairment (Moderate Impairment) Blind

Does your child wear glasses? YES (NO) Other comments: NOT SURE HOW MUCH SHE CAN SEE

How would you describe your child's hearing? (Normal) Mild Impairment Moderate Impairment Deaf

Does your child wear a hearing aid? YES (NO) Other comments:

How would you describe your child's use of his/her hands?

Control of right hand is: Normal Mildly Impaired Moderately Impaired (Severely Impaired)

Control of left hand is: Normal Mildly Impaired Moderately Impaired (Severely Impaired)

Is your child able to walk independently: YES (NO)

If NO, describe what assistance is needed: SANDY IS IN WHEELCHAIR

Attending Behavior

How does your child respond to new or unexpected sounds, lights, people, or situations in the environment (e.g., new foods, new room arrangement, bright colored lights)? SHE IS OFTEN DROWSY AND NOT ALERT, BUT SOMETIMES SHE CRIES AT LOUD SUDDEN SOUNDS

Approximately how long does your child attend to any one thing he/she is interested in? MAYBE 5 minutes. WILL LISTEN TO CERTAIN RECORDS FOR 10 OR 15 MINUTES

Interfering Behavior

What behaviors of your child are irritating to you and others around you? WHEN TIRED OR frustrated, SHE STARTS HOLLERING

What behavior problems does your child exhibit which we should be aware of? Temper tantrums

How often and in what situations does your child emit these behaviors? DAILY - HATES TO HAVE LEG BRACES put ON.

What do you do when these problems occur? TRY TO IGNORE HER, & put BRACES ON ANYWAY

Reinforcers

Describe your child's typical day.			What about this activity does your child like or dislike?
Event	Approximate Time	With Whom	
Awakens	7:00	MOTHER	USUALLY KIND OF CRANKY AT FIRST
Dressing	7:15	MOTHER	DOESN'T LIKE IT.
Grooming (bath, hair, teeth)	AFTER BREAKFAST OR BEFORE BED	MOTHER OR FATHER	LOVES BATHING, HATES TOOTHBRUSHING AND HAIRBRUSHING
Breakfast	7:30	ENTIRE FAMILY	LIKES SCRAMBLED EGGS
Lunch	AT SCHOOL	—	—
Dinner	6:30	ENTIRE FAMILY	LIKES CERTAIN FOODS, HATES SOME FOODS
School	8:30-3:30	—	—
Nap	AFTER SCHOOL	ALONE	LIKES - GOES RIGHT TO SLEEP
Play	AFTER SUPPER	FATHER & BROTHER	LIKES TO BE TICKLED AND PATTED

einforcers
continued)

	What does your child like and dislike?	Describe what your child does to let you know that he/she likes or doesn't like this.
Activities Likes	PLAY WITH FATHER, TICKLING, TAKING A BATH	GIGGLES, SEEMS ALERT
Dislikes	HATES HAVING LEG BRACE PUT ON. HATES DRESSING, TOOTHBRUSHING & HAIR COMBING.	WHINES OR HAS TEMPER TANTRUM
Objects Likes	DOESN'T handle objects	
Dislikes		
People Likes	FAMILY MEMBERS, ESPECIALLY FATHER.	GIGGLES, VOCALIZES MORE OFTEN. SEEMS MORE WIDE AWAKE
Dislikes		
Food Likes	ALL SWEETS, ESPECIALLY ICE CREAM POTATOES	LESS TROUBLE CHEWING & SWALLOWING THESE FOODS. OPENS MOUTH FOR NEXT BITE. SAYS "MA" WHEN NOT GIVEN MORE OF THESE FOODS
Dislikes	LIQUIDS MEAT MOST VEGETABLES	WON'T CHEW. WON'T OPEN MOUTH. SOMETIMES TURNS HEAD AWAY.

Which of the above would you consider your child's favorite? ICE CREAM & FATHER

List below specific activities, objects, or food which the child routinely experiences, interacts with or receives nearly every day (for example: bath, listening to music, grape juice).

Activities	Objects	Specific Foods
DRESSING		EGGS
MEALS		JUICE
NAP		APPLESAUCE
BATH		
PLAYS WITH FATHER		
RECORDS		

Communicative Function

Does your child communicate any of the below to you?	Frequency: Often	Frequency: Sometimes	Frequency: Rarely or Never	What does the child do to let you know this?	Are there certain times of the day or certain circumstances under which this usually occurs?
Hungry		X		VOCALIZES, OPENS MOUTH, SAYS "IMA"	
Thirsty			X	—	
Sick/in pain	X			CRIES, SCREAMS	
Wet/Soiled			X	—	
					Are there certain times of the day or certain circumstances under which this usually occurs?
Happy		X		SMILES, GIGGLES	BATH TIME PLAYING WITH FATHER
Sad		X		CRIES	OCCASIONALLY WHEN LEFT ALONE IN ROOM
Mad	X			TEMPER TANTRUMS CRIES, SCREAMS	DRESSING, HAIRBRUSHING, GETTING LEG BRACE ON
Tired of or dislikes an activity	X			TEMPER TANTRUMS	SAME AS ABOVE
Frustrated	X			CRIES, SCREAMS	SOMETIMES WHEN TIRED OF SITTING IN WHEEL CHAIR
Other (Specify)					

Does your child let your know he/she wants one of the below?	Frequency: Often	Frequency: Sometimes	Frequency: Parely or Never	How does your child let you know this?	Are there certain times of the day or certain circumstances under which this usually occurs?
More of something	X			OPENS MOUTH OR VOCALIZES FOR MORE FOOD	MEALTIMES
Your attention		X		SOMETIMES VOCALIZES	WHEN I'm BUSY AND IGNORING HER
Particular object preferred over another			X		

Does your child ever tell you that he/she is hungry, thirsty, wants your attention, etc. without first being asked?

(YES) NO How frequently? MAYBE ONCE A DAY

Communicative Responses

Does your child currently use one of the following to effectively get your attention, specify wants and needs, etc.?

Vocalizations	(YES)	NO	
Gestures	YES	(NO)	
Speech	P YES	NO	
Manual Signs	YES	(NO)	If YES, what system?
Communication Board	YES	(NO)	If YES, can the board be taken to school?

Has your child had previous training in the following?

Speech	(YES)	NO	If YES, describe the progress in that training, NO PROGRESS
Manual Signs	YES	(NO)	
Communication Board	YES	(NO)	

Check ways your child communicates	Frequency: Often	Frequency: Sometimes	Frequency: Rarely or Never	What exactly is your child trying to tell you when this occurs? (example: Joe holds out and shakes toys to get Mom's attention.)
Makes facial expressions (smiles, frowns)	X			SMILES WHEN SHE HEARS VOICES SHE RECOGNIZES
Laughs	X			WHEN BEING TICKLED OR TAKING A BATH
Cries	X			
Screams	X			
Tantrums	X			SEE EARLIER COMMENTS
Looks at people			X	
Looks at objects			X	
Moves body (shakes head, leans forward, etc.)		X		SOMETIMES TURNS HEAD TO SIDE TO AVOID CERTAIN FOODS (LIQUIDS, MEAT ETC.)
Gestures (arm or hand movement)			X	OCCASIONALLY REFLEXIVELY RAISES ARMS
Points to or reaches for objects or people			X	
Imitates other's actions			X	
Acts out (mimes) communication			X	
Makes sounds	X			WHEN SHE WANTS ATTENTION OR MORE FOOD
Signs single words			X	
Signs 2-4 word phrases			X	
Points to pictures or printed symbols			X	
Says single words		X		SAYS "MA"
Says 2-4 word phrases			X	
Other (describe)			X	

Communicative Environment

What does your child regularly communicate about (for example: wants attention, is hunbry, etc.)? Describe how this communication occurs. WHEN SHE DOESN'T LIKE SOMETHING OR WHEN SHE WANTS MORE FOOD

Are there situations during the day when your child is required to make a response before some activity is started or continued (for example: asking for another drink of juice at breakfast, or requesting toys off a shelf)?
YES (NO) If YES, describe the situation.

Are there situations when your child has to make a choice between two or more objects (for example: preferring milk instead of juice, or rocker instead of swing)? YES (NO) If YES, when?

Are there situations during the day when the child must gain your attention in order to get some desired object or meet some need? YES (NO) If YES, when?

Would you be interested in doing any communication training at home? (YES) NO

Interpretation of Caregiver Interview

The following guidelines briefly outline how the teacher should proceed in selecting initial training objectives once the assessment process if completed.

1. Organize the information gained from the assessments on a worksheet similar to the one in Figure 2. This lists all the high-preference reinforcers and communicative behaviors identified for the child. The sample presented below is taken from the Caregiver Interview just presented. In actual practice, the information obtained from the Teacher Questionnaire would also be included in the worksheet below.

CCC

RESPONSE AND REINFORCER SUMMARY SHEET

Student SANDY

Situation	Reinforcers	Communicative Responses	Potential Communicative Responses
PLAY-TIME AT HOME	FATHER	SMILES, LAUGHS VOCALIZES	
PLAY-TIME AT HOME	TICKLING	SMILES, LAUGHS VOCALIZES	
BATHTIME AT HOME	TAKING BATH	SMILES, LAUGHS	
SMILES & VOCALIZATIONS	SWEETS	OPENS MOUTH VOCALIZES	SOMETIMES TURNS HEAD AWAY TO AVOID DISLIKED FOOD. NEED TO ENCOURAGE VOLUNTARY CONTROL OF HEAD TURNING.

Figure 2: Sample Response and Reinforcer Summary Sheet

NOTE: Blank copies of all sample data sheets are included in Appendix C.

2. If several high-preference reinforcers have been identified, the primary objective will be to train the child to request those reinforcers, and

the teacher should proceed to the "Request Training" section of the curriculum. Guidelines are provided there which will aid the teacher in selecting the appropriate Request Training objective (e.g., REQUESTING MORE, REQUESTING THROUGH CHOICE, etc.).

If "Request Training" is indicated, teachers should still familiarize themselves with procedures described in IDENTIFICATION OF WANTS AND NEEDS. The identification and development of new reinforcers should be a continuing goal in any communication training program. Most high-preference items or activities do not remain reinforcing for the child indefinitely, particularly when frequency of access to them is increased via training.

3. If few or no high-preference reinforcers have been identified, the primary objective must be the IDENTIFICATION OF WANTS AND NEEDS. Procedures for this objective are presented in the next section of the manual. Request training cannot be begun if high-preference items or activities have not been identified.

Using the example of Sandy, above, the following decisions can be made regarding initial programming:

Reinforcers: Several reinforcers have been identified for Sandy, including several foods and activities. Obviously, certain reinforcers, namely Father and bath taking, cannot readily be incorporated into classroom programming. Requesting these particular high-preference reinforcers will best be trained at home. The remaining reinforcers can be utilized in the classroom.

Responses: The most consistently used communication response appears to be vocalizations. Since the mother has reported that Sandy consistently uses this behavior to indicate that she wants more of something or wants attention, it would appear that Sandy has voluntary control of this behavior. Voluntary control of vocalization makes Sandy a good candidate for the Requesting More objective (see Request Training section of the manual for detailed response selection guidelines). Though smiling and laughing do communicate her enjoyment of certain activities, they occur following the activity rather than before, and therefore would be more difficult to train as a requesting response.

Potential Responses: There is some evidence in the Caregiver Interview that Sandy could eventually use a head turn communicatively. It may be desireable to request that the occupational therapist help with "facilitator

training" (see Appendix A) in order to facilitate the development of voluntary control over head turning. Such a head movement to the right and left would allow Sandy to make choices between two foods, etc.

Training Settings: Several settings appear to provide good functional communication training opportunities at home. These include play time with father, mealtimes and bathtime at home. In addition a Teacher Questionnaire (not shown) suggested that free-time and snacks would be ideal settings in the classroom.

WANTS and NEEDS

Figure 3: Potential Reinforcers For The Severely Handicapped Child

EDIBLES

Fruits
Desserts
Salty Foods
Honey
Candy
Pop
Milk
Fruit Juices

AUDITORY/VISUAL STIMULI

Singing
Record Player
Radio
TV
Music Box
Percussion instruments
  bells
  chimes
  maracas
  sand blocks
"Looney Tunes Choo-Choo"
"Jack-in-the-Box"
"See-n-Say"
Flashing lights
Pinwheels
Mobiles

RHYTHMIC/MOTO-KINESTHETIC ACTIVITIES

Bouncing up and down
Swinging
Rocking
Riding in wagon
"Tubmobile"

SETTING CHANGES

Going outside
Moving from wheelchair to mat
Reduction of discomfort e.g.,
  changing position

PHYSICAL INTERACTION

Hugging
Patting
Pat-a-cake
Peek-a-boo
Tickling

and termination of each item. A sample completed data sheet is provided in Figure 4.

NOTE: Blank copies of all sample data sheets are included in Appendix C.

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REINFORCER SAMPLING DATA SHEET

Student JAMIE

Date	Item/Activity	Response to Introduction	Response to Termination
9/11	POPCORN	1. TURNED HEAD AWAY	1. TURNED HEAD BACK
9/11		2. NO RESPONSE	2. NO RESPONSE
9/13		3. LOOKED AT IT	3. NO RESPONSE
9/13	WAGON RIDE	1. CRIED	1. STARED AT TRAINER
9/13		2. SMILED	2. CRIED, TRIED TO MOVE WAGON
9/13		3. SMILED	3. CRIED, & STARED AT TRAINER
9/13	ORANGE JUICE	1. SPIT IT OUT	1. NO RESPONSE
9/13		2. TURNED HEAD AWAY	2. NO RESPONSE
9/14		3. SPIT IT OUT	3. NO RESPONSE
9/13	ICE CREAM	1. ATE IT	1. STARED AT EMPTY SPOON
9/14		2. SMILED WHEN SAW BOWL IT, ATE IT	2. LOOKED FOR SPOON
9/14		3. ATE IT, LICKED MOUTH	3. CRIED FOR MORE, REACHED TOWARD TRAINER
9/14	MUSIC (RECORD)	1. STOPPED SELF-STIMULATORY BEHAVIOR	1. STARTED WHINING
9/15		2. LOOKED AT RECORD PLAYER	2. STARTED WHINING
9/15		3. STOPPED FUSSING	3. LOOKED TOWARD RECORD PLAYER

Figure 4:

Reinforcer Sampling Data Sheet

a. Record the child's response to the presentation of the item or activity. Such reactions as smiling, looking, cessation of ongoing activity, etc. may indicate a positive response to the potential reinforcer.

b. Also record the child's response to the termination of the activity. In other words, children may often show no response to the presentation of something, but may show displeasure at its termination. For example, what does the child do when given only a small sip of juice, and then the juice is withheld (within sight) for several minutes. Or, observe the child's response when he is rocked briefly, then the rocking is abruptly stopped. Behaviors such as whining, reaching, visual searching, increased motor activity, vocalizing, etc., may indicate the child's displeasure or frustration at the interruption of an enjoyed activity. (See example of "Barbara" below)

Example

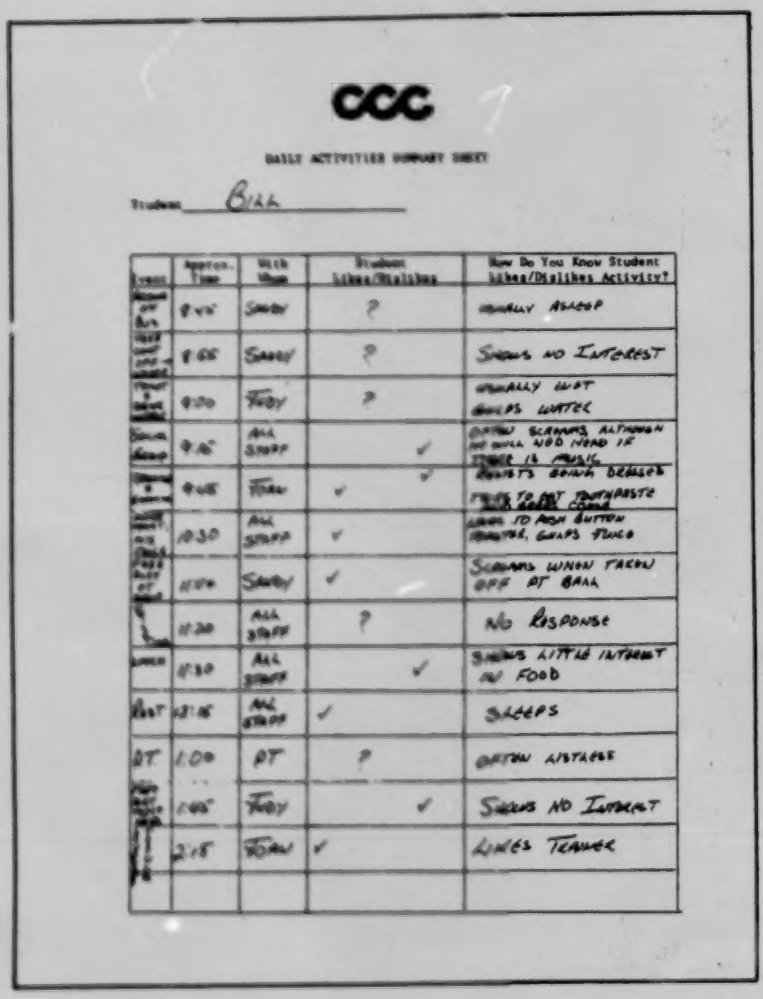
Barbara was a heavily medicated child, who often slept most of the day. No one, including her parents could think of anything she liked. She had difficulty swallowing and chewing, and despite the teacher's presentation of even the "yummiest" foods, such as honey and pop, no foods were found to be high-preference items. One day, the physical therapist commented on how much Barbara seemed to enjoy lying on her stomach over the PT ball and being gently rolled back and forth. The teacher tried this activity three different times over a two day period, and observed that not only were Barbara's eyes wide open during the activity, but whenever the teacher stopped the back and forth movement, Barbara made sounds and attempted to raise her head as if to say "Don't stop!" This behavior suggested to the teacher that rolling on the PT ball was a high-preference activity for Barbara. It was then possible to proceed to the "Requesting More" objective, training Barbara to make a specific response to indicate that she wanted more rolling on the ball.

2. If a potential high-preference item or activity has been identified via the "Reinforcer Sampling" procedure above, proceed to request component.

3. If no high-preference items or activities can be identified using this procedure, go to Procedure B, "Identification of Reinforcers via Environmental Manipulation".

B. Identification of Reinforcers via Environmental Manipulation

1. Using a data sheet similar to the one presented in Figure 5, carefully analyze the child's daily activities. Make a list of those activities which are a regular part of the child's daily schedule, and which the child may anticipate. These are generally such activities as meals, snack time, rest period, outdoor play, music time, and so-on.



CCC

DAILY ACTIVITIES SUMMARY SHEET

Student: BILL

Event	Approx. Time	With Whom	Student Likes/Dislikes		How Do You Know Student Likes/Dislikes Activity?
	8:45	SANDY	?		USUALLY ASLEEP
	8:55	SANDY	?		SEEMS NO INTEREST
	9:30	TEDDY	?		USUALLY EAT GRABS WATER
	9:40	ALL STAFF		✓	OFTEN SCREAMS, ALTHOUGH HE SEEMS NOT TO NEED IT THERE IS MUSIC
	9:45	TEAM	✓	✓	POINTS TO MOUTH WHEN HUNGRY TRIES TO PUT THINGS IN MOUTH
	10:30	ALL STAFF	✓		LEARN TO PUSH BUTTON TO GET, GRABS TOYS
	11:00	SANDY	✓		SCREAMS WHEN TAKEN OFF AT BALL
	11:20	ALL STAFF	?		NO RESPONSE
LUNCH	11:30	ALL STAFF		✓	SEEMS LITTLE INTEREST IN FOOD
REST	12:15	ALL STAFF	✓		SLEEPS
OT	1:00	OT	?		OFTEN DISTRESS
	1:05	TEDDY		✓	SEEMS NO INTEREST
	2:15	TEAM	✓		LIKES TEACHER

Figure 5: Sample Daily Activities Summary Sheet

NOTE: In some classrooms, daily schedules are not sufficiently predictable to enable the severely multiply handicapped child to build up expectations of "upcoming" events and activities. It is important to have at least part of the classroom day organized so that certain events and activities always occur at a certain time. It is also helpful to have each event associated with several "preparatory" cues. For example, snack time might always occur after music time, and could be associated with the following types

of cues: buzzer sounds, chairs are set up and snack items are placed on the table; the children are moved to a particular area of the classroom, etc. By arranging the environment in this way, these cues thus become discriminative stimuli for certain events. Then, if the cues occur but are not followed by the event the child has come to expect, the child may exhibit certain behaviors which indicate that the particular event is one which he enjoys and looks forward to.

2. Systematically "manipulate the environment" in this way: delay or interrupt the anticipated activity, on at least two different occasions, and record the child's response. Some children who have shown no positive reaction to the activity previously, may respond to the absence of the activity if they have built up an anticipation for it. See the sample data sheet in Figure 6. It was concluded that eating lunch was a high-preference activity for Bill.

CCC

ENVIRONMENTAL MANIPULATION PLANNING SHEET #1

To Identify Potential Reinforcers

Student Bill

Manipulation Probe-Situation #1

Existing Situation (Describe anticipated activity and critical cues)
BILL RECEIVES HIS FOOD TRAY EACH DAY IN THE LUNCH ROOM AFTER ALL THE CHILDREN ARE SEATED AT THE TABLE.

Manipulation (Teacher behavior producing a "need to communicate")
ALL THE CHILDREN EXCEPT BILL RECEIVE THEIR TRAYS. THE TEACHER OBSERVES BILL'S RESPONSE TO THE MISSING TRAY FOR ABOUT 5 MINUTES, THEN GIVES HIM THE TRAY AND RECORDS HIS RESPONSE.

Responses

Date	Responses
9/6	LOOKED AROUND, THEN STARTED HOLLERING
9/7	TRIED TO GRAB SOMEONE ELSE'S TRAY

Manipulation Probe-Situation #2

Existing Situation (Describe anticipated activity and critical cues)

Manipulation (Teacher behavior producing a "need to communicate")

Responses

Date	Responses

Figure 6:
Sample Environmental Manipulation Planning Sheet #1, To Identify Potential Reinforcers

3. When an activity which the child anticipates and enjoys has been identified, proceed to the "Request Training" section of the manual. (See example of "Sherry" below.)

Example

Sherry showed no response to the presentation of any potential reinforcers, so a systematic analysis of her daily schedule was done. The teacher noted that Sherry arrived at school each day about 15 minutes before the other children, and that one of the aides usually spent that time talking to her and brushing Sherry's hair. The teacher decided to withhold this activity one day, and observe Sherry's response. The next day upon her arrival at school, Sherry was placed in the corner across the room from the aide, who busied herself doing paper work. Within five minutes, Sherry began squirming in her wheelchair, and flailing her arms. When the aide did approach her and began interacting normally with her, Sherry was again calm and immobile. Thus, the teacher was able to determine by means of this environmental manipulation, that the social interaction and hair brushing provided by the aide were high preference activities. The teacher then proceeded to the Request for More communication objective, using that activity.

4. If no high-preference reinforcers are identified using this procedure, proceed to C, Developing Reinforcers, below. Procedure C should also be used to develop additional reinforcers for those children who have only a few identified high-preference reinforcers or if reinforcers have begun to lose strength after repeated use in request training.

C. Developing Reinforcers

In those cases where no reinforcers can be identified it will be necessary to develop them. The following suggestions may be helpful in the development of new reinforcers:

1. Frequently expose the child to new potential reinforcers (e.g., food, toy, activity).

   a. Present the new item or activity at the same time, and with the same preparatory cues each day for at least 4 consecutive days.

   b. On the next day, withhold or interrupt the new activity, and observe the child's response. (see example of "Jonathon" below)

Example

Jonathon was a child who engaged in a great deal of self-stimulatory behavior. He appeared to have few responses to any external stimuli, either positive or negative. Like so many autistic-like children, he was very contented in his "own little world". Neither Procedure a nor b, above, had revealed any high-preference items or activities. Thus it was necessary to try to develop reinforcers for Jonathon.

Music was used frequently in Jonathon's classroom, but mostly as background noise, at various times of the day, and Jonathon never appeared to be aware of it. The teacher decided to attempt to build up an expectation for music by having a special music time each day with Jonathon. For several days in a row, following lunch, she sat Jonathon directly in front of the phonograph speaker, and turned the music up fairly loud. The same song was played each day, and no other children or activities were in Jonathon's immediate vicinity. This was done consistently for nine consecutive days. On the tenth day, the teacher placed Jonathon in the usual music spot, but did not turn on the record player. Jonathon stopped his typical finger play and rocking, and whirled around to stare at the phonograph. The teacher concluded that he was obviously aware of the music and had come to expect and enjoy it. The teacher was then able to proceed to communication training to teach Jonathon to point to the phonograph to indicate he wanted to hear the music.

REQUESTING

THREE DECISIONS
IN
REQUEST TRAINING

THREE DECISIONS for REQUST TRAINING

RESPONSE SELECTION

When training a severely handicapped child to make a request, the selection of the particular response to be trained will depend upon the response repertoire and skill level of the child. For example, let us say that juice has been identified as a high-preference item for a child. Depending upon that child's abilities, he may be trained to do any one of the following. (This list is not intended to be exhaustive):

Say the word "juice".
Sign "juice" manually.
Point to a symbol on an electronic board which represents juice.
Point to a picture of a glass of juice.
Point to the juice from an array of two or three items.
Turn his head toward the glass of juice.
Look at the glass of juice.
Lift his head to request more juice.
Vocalize "ah" to request more juice.

Despite obvious differences in the level of sophistication and difficulty of these various responses, they can all be equally effective in obtaining juice for the child.

In this curriculum, responses which can be used to make requests can be divided into three levels:

1. Symbolic responses are those which can be used to make a symbol, such as speech or manual sign. Responses at this level require good vocal and/or gestural imitation skills. (In some cases a student using a communication board may use a symbolic response system such as bliss symbols see Appendix D. It is unlikely that the type of students for whom this curriculum is intended will develop such a system.)

2. Selection responses are those which can be used to make a choice. These include any response which can be directed toward a particular object in the environment, or a picture or symbol on a communication board. The most frequently trained responses in this category are pointing, and directed eye gaze.

3. Signal responses are those which can be used to signal a simple request such as a request for more of some item or activity. These can include any response under the child's voluntary control, such as head movements, facial expressions, gross vocalizations, eye blinks, body position changes, and so-on.

NOTE: With recent advances in technology almost any response can eventually be used to activate an electronic communication board. See Appendix D for information.

After obtaining information through the Caregiver Interview, Teacher Questionnaire, Identification of Wants and Needs, and careful observation of the child, a list of potential responses can be generated. For some severely impaired children there may be very few potential responses, and the decision regarding which one to train as a request response will be relatively straightforward. For other children, however, there may be several potential responses. In such cases teachers may be unsure about which response is the "best" response to train initially. Generally there are four criteria which may aid the teacher in selecting a good response for training. These are discussed below.

CRITERIA FOR SELECTING A RESPONSE

1. Select a response which is useful to the child.
   The child must be able to use the response in some way to control his environment or to gain social interaction. The question below may help teachers determine the usefulness of a potential response.

   a. Does the response enable the child to ask for something he wants?

   b. Will there be frequent opportunities to use the response, both at home and in the classroom?

2. Select a response which is under the child's voluntary control.

3. Select a response which can be trained in a reasonable amount of time.
   It is important that the child quickly acquire a response which can be used for functional communication, i.e., to request those high-preference reinforcers identified earlier. The following questions may help the teacher meet this first criterion:

   a. What does the child already do to indicate that he wants the high-preference reinforcer? A response which is already part of the child's repertoire will generally be easier to train than one which is not. It is often possible to modify an already existing response, by either expanding or refining it. For example, a child's tendency to grab for desired food items could be shaped into a pointing response, or a slight head movement could be shaped into a distinct head turn to the left, etc.

   b. Which response can be most easily prompted? A response for which there is a reliable prompt can be trained faster than one for which there is not a prompt. For example, it would be very time consuming to teach a child to say the work "cookie" if the child is unable to imitate vocally.

4. Select a response which is discrete.
   A discrete response is one which is distinct and can be reliably identified by others. A response such as pointing to a desired item is distinct and would be more easily understood by most people than

use of an eye blink as a signal for "more juice". However, this criterion need not be considered unless the potential response has already met the criteria of usefulness and trainability listed above. If the response would not be a useful one for the child, and if it can not be fairly easily trained, it should not be selected as the response for initial request training.

Unfortunately, there is no straightforward formula for making the decision about which response to train. Each of the considerations listed above may or may not be of importance for any given child. The teacher must ask the above questions, and then use his or her own judgment, as well as that of the parent, in the final selection of a response. It is important that teachers keep in mind that communication function is the goal, rather than communicative form. In other words, teachers should not spend a great deal of time attempting to train a particular response, such as a sign, when a simpler response, such as pointing could be easily taught initially and would quickly provide the child with a functional communicative response.

IN MAKING DECISIONS ABOUT WHICH RESPONSE TO TRAIN FOR MAKING A REQUEST, THE PRIORITY GOAL, INITIALLY, IS THE DEVELOPMENT OF FUNCTIONAL COMMUNICATION SKILLS RATHER THAN A PARTICULAR COMMUNICATIVE FORM.

The following section contains several case studies of children involved in the program development phases of the CCC Program. The case studies describe the children's presenting behaviors and describe the rationale for the selection of a particular response to be used to make a request.

Case study #1 Jonathon

Jonathon is a profoundly retarded, severely handicapped child. He has spastic quadriplegia and has no control over his limbs. He has questionable hearing and vision. His presenting behaviors at the beginning of training consisted of random vocalizations, reflexive arm movements, occasional visual search eye movements, and head turning to avoid certain foods, and occasionally to localize to sound. His only high-preference activity is being bounced on the physical therapy ball.

In Jonathon's case, the decision about which response might best be trained for communication is a simple one. Head turning is the best choice for the following reasons:

NOTE: The case studies and examples used throughout this manual are based upon actual children; however, the names used are fictitious.

a. *head turning could be useful to the child as a signal to continue an activity the child enjoys.*
b. *head turning is the only behavior which the child already uses communicatively.*
c. *head turning is the response which appears to be most under Jonathon's voluntary control.*
d. *head turning is a response which can be physically prompted.*

One disadvantage of the head turn response is that trainers must go to some efforts to make the response discrete, e.g., define the target behavior as a head turn approximately 45 degrees to the right, which occurs within 30 seconds.

Case study #2 Joey S.

Joey is a profoundly retarded ambulatory child, who appears to have normal hearing and vision. He uses some speech sounds, however, these are not under imitative control. Other potential responses include eye gaze, head movements, and reaching. The only communicative behaviors the child uses are whining and vocalization. For this child, pointing is selected as the response to be trained for the following reasons:

a. *Pointing can be shaped easily from the existing reaching behavior.*
b. *Pointing can easily be used to obtain the things Joey wants, namely, food items.*
c. *Pointing can be physically prompted.*
d. *Pointing can eventually be used with a pictures and communication board.*
e. *Pointing is a response that is generally understood by other people.*

In this case, even though the child does have some ability to make speech sounds, speech has not been selected as the response with which to begin communication training. It might be recommended in this case that the speech pathologist work individually with this child to try to develop his imitative speech skills. Nevertheless, the immediate goal for this child is the training of a response which can be used to obtain wants and needs.

Case study #3 Kathleen

Kathleen is a child who has been in language training for several years. She has good ability to imitate manual signs. However, she never uses signs communicatively. While she is not profoundly retarded, there are few things she enjoys or wants from the environment, and thus appears very dull. The only thing she really enjoys is being pushed in the playground swing.

The response selection decision in this case is clear cut. Kathleen has already demonstrated her ability to make signs. Thus, the sign for "swing" was trained. This became a very functional communication response for Kathleen who can now request something she enjoys. Teaching the sign for "swing" meets the following response selection criteria:

a. It can be quickly and easily trained for this particular child.
b. It is a discrete response.
c. It has great "utility" or usefulness for the child, because she can use it to request the activity she most enjoys.

REQUEST SELECTION

SELECTING THE TYPE OF REQUEST

There are four Request Training objectives in the CCC Program: REQUESTING THROUGH CHOICE, REQUESTING MORE, REQUESTING THROUGH SPEECH OR SIGN, and REQUESTING THROUGH COMMUNICATION BOARD. The particular objective or objectives selected for training will, for the most part, be dependent upon the behavioral repertoire of the child, i.e., what the child can do. The following section presents a brief description of each of the request training objectives, and guidelines for selecting the appropriate objective with which to begin communication training.

Requesting Through Choice. Most severely multiply handicapped children are able to learn a consistent selection response. A selection response is one which can be used to make a selection from among an array of two or more items. Many children already have such a response in their behavioral repertoire (e.g., pointing or directed eye gaze). For these children, REQUESTING THROUGH CHOICE is an appropriate place to begin training.

In this objective the child is trained to indicate his choice by directing a response toward the chosen (desired) item. For example, a child may be trained to make a choice from among various food items at meal or snack times (e.g., he may be given a choice between water or milk as a beverage). Eventually the child might be trained to select pictures of the items rather than the actual item itself, thus enabling the child to request an item which is not present by using a simple communication board.

Requesting Through Communication Board. Once a child can point, or use some other selection response to choose from among two or more high-preference items, it is possible to begin communication board training. In this objective, the high-preference items are paired with pictures, and objects themselves gradually faded out. A child who has a good choice response at the beginning of training, and who has had experience working with pictures, may begin in this objective.

Requesting More. Some children are too impaired to make a discrete selection. However, nearly all of these children can be trained to use a simple motor response to signal a request for "more" of some food or activity. For example, a child may be taught to lift his head to signal a request for continuation of a favorite record, or for another bite of cookie.

Because the "more" response cannot be used to request something that hasn't already been presented to the child, it is somewhat less functional than a choice response. Nevertheless, for the severely impaired child, it

is an important first step in learning that communication behaviors can be used to control the environment. That is, the child can learn that something he does can control the behavior of another person which results in the child's obtaining more of something pleasurable.

Requesting Through Speech or Sign. A few severely handicapped children will be able to use symbolic responses such as speech or manual sign, to make requests. The advantage of such a response is that it can easily be used to request something that is not immediately present (can't be seen). For example, a child can request juice which is in the refrigerator and not visible.

As mentioned earlier, however, speech and manual sign are often inappropriate responses for initial communication training, for the simple reason that the responses cannot be trained quickly. The REQUESTING THROUGH SPEECH AND SIGN objective is an appropriate place to begin communication training only if the child demonstrates exceptional ability to use speech or sign, and if the child already communicates wants and needs in some way.

NOTE: If teachers, or parents, are invested in teaching children speech or manual sign, it is recommended that speech pathologists be employed to teach the child important "facilitator" skills such as vocal or gestural imitation. In most cases these skills can be trained concurrently with CCC Program objectives without interfering with them.

Figure 7 summarizes and compares the major features of the REQUEST TRAINING objectives. Those features are:

1. Response. As discussed in the preceding section, the response capability of the child is a major factor in selecting the appropriate request training objective.

2. Reinforcers. As stressed throughout this manual, at least one high-preference reinforcer must be identified before a child can begin any request training objective. For those children who have few identified reinforcers, the identification and development of high-preference reinforcers continues to be an important objective throughout communication training. As the figure below suggests, the training objectives differ slightly with regard to the number of reinforcers which are recommended as prerequisite to beginning a particular objective. The REQUESTING MORE objective can be trained even if only one high-preference reinforcer has been identified. REQUESTING THROUGH CHOICE and REQUESTING THROUGH COMMUNICATION BOARDS, on the other hand, eventually require at least two high-preference items or activities for completion of the training objective. (However, as can be seen from the procedures presented in the next section, students may begin REQUESTING THROUGH CHOICE and REQUESTING THROUGH COMMUNICATION BOARD with only one identified reinforcer). Finally, it is generally recommended that students who begin in REQUESTING THROUGH SPEECH OR SIGN have several identified reinforcers.

3. Stimulus conditions. Figure 7 also indicates that there are differences in the stimulus conditions under which the objectives are trained. In training the child to request "more", access to the high-preference item

REQUEST TRAINING OBJECTIVE	RESPONSE	NUMBER OF HIGH-PREFERENCE ITEMS REQUIRED	STIMULUS CONDITIONS
REQUESTING "MORE"	Any voluntary signs.	A minimum of one	High-preference reinforcer already presented. Child signals to request "more" of item or activity.
REQUESTING THROUGH CHOICE	Response capable of making a discrete selection from a minimum of two items. e.g., pointing, reaching, directed eye gaze	A minimum of two to complete objective	High-preference reinforcer(s) visible but not already presented. Child chooses desired item.
REQUESTING THROUGH COMMUNICATION BOARD	Same as REQUESTING THROUGH CHOICE, plus ability to recognise and discriminate pictures.	Same as REQUESTING THROUGH CHOICE	Pictures of high-preference reinforcers visible.
REQUESTING THROUGH SPEECH OR SIGN	Spoken or manually signed labels	Preferably several	High-preference reinforcers available but not in sight.

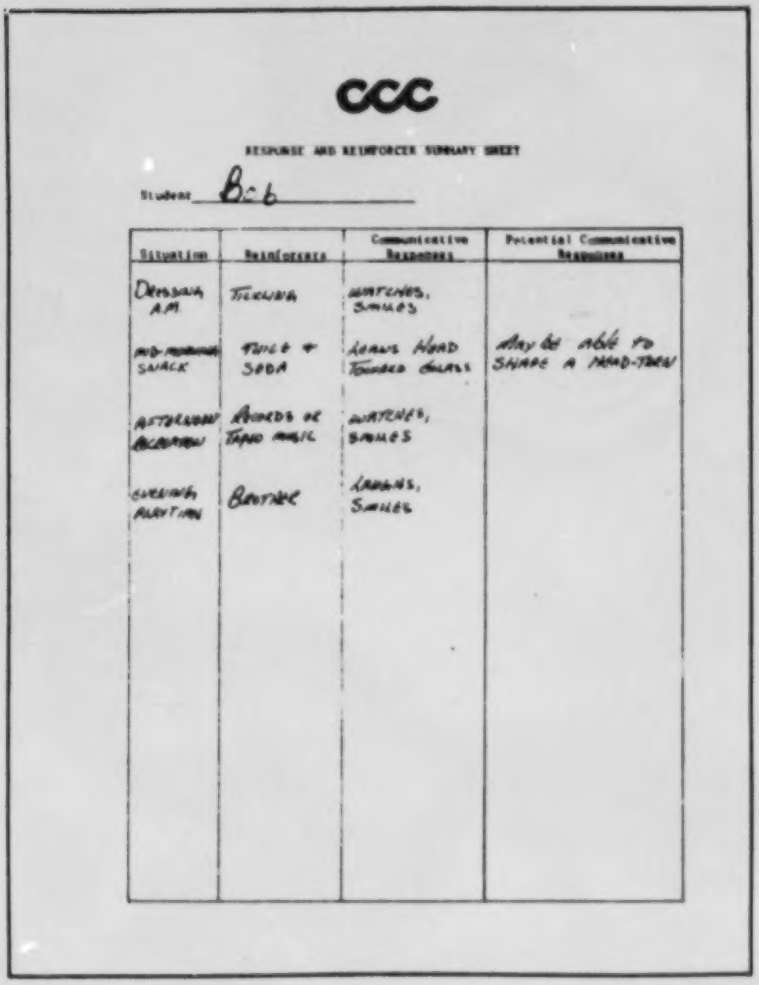
Figure 7:

Summary of Request Training Objectives

or activity is already provided intially, and the child need only signal for a continuation or re-presentation of the reinforcer. In REQUESTING THROUGH CHOICE, the high-preference reinforcers are visible to the child but not within reach. Eventually two such items are made available. The child is trained to make a selection response which provides access to the desired item. The procedures for REQUESTING THROUGH COMMUNICATION BOARD are similar to those for CHOICE, except pictures are paired with the high-preference items and the items themselves are eventually removed from sight. REQUESTING THROUGH SPEECH AND SIGN eventually requires that the child request the desired object in the absence of any external representation of that object.

Guidelines for Selecting Initial Training Objectives

1. List potential responses based on information obtained from Caregiver Interview, Teacher Questionnaire, and direct observation of the child. (see sample data sheet in Figure 8), and select the best response based on the guidelines discussed under Response Selection.



CCC

RESPONSE AND REINFORCER SUMMARY SHEET

Student: Bob

Situation	Reinforcers	Communicative Responses	Potential Communicative Responses
Dressing A.M.	Tickles	watches, smiles	
Mid-morning snack	Juice & soda	leans head forward chews	May be able to shape a head-turn
Afternoon activity	Records or Tape music	watches, smiles	
Evening activity	Bounce	leans, smiles	

Figure 8: Sample Response and Reinforcer Summary Sheet

2. Decision Rules for selecting Initial Objective:

   a. If the response selected is a symbolic response such as a spoken or signed label, training should begin in the REQUESTING THROUGH SPEECH OR SIGN OBJECTIVE.

   b. If the response selected is one the child can use to choose one item from an array of 2 or more items, training should begin in the REQUESTING THROUGH CHOICE objective. These response include such behaviors as directed eye gaze (e.g., looking at an object for at least 2 seconds), reaching, pointing, head turning to the right and left side, etc.

   c. Once a child is able to make a choice from among two or more high-preference items, and has completed the REQUESTING THROUGH CHOICE objective, the teacher may choose to begin communication board training by proceeding to the REQUESTING THROUGH COMMUNICATION BOARD objective, working primarily on generalization of the choice response. A few children may demonstrate potential for learning speech or manual sign and can proceed to the REQUESTING THROUGH SPEECH OR SIGN OBJECTIVE.

   d. If the response or responses the child can produce voluntarily are not ones which can be used to make a choice as in b above, the appropriate objective in which to begin training is REQUESTING MORE. These responses include such simple behaviors as a distinct movement of any part of the body (e.g., head lift, movement of arm or leg, changing position of torso) vocalizations (e.g., "ah", grunting, tongue click), eye contact, and so-on. Below are examples which demonstrate selection of the appropriate request training objective. The same children were discussed earlier under "Response Selection".

Case Study #1 Jonathon

Jonathon is a profoundly retarded, severely handicapped child. He has spastic quadriplegia and has no control over his limbs. He has questionable hearing and vision. His presenting behaviors at the beginning of training consisted of random vocalizations, reflexive arm movements, occasional visual search eye movements, and head turning to avoid certain foods, and occasionally to localize to sound. His only high-preference activity is being bounced on the physical therapy ball.

For reasons discussed in the previous section, (see page 32) the response chosen for communication training in this case was head turning. The appropriate request training objective is REQUESTING MORE, for the following reasons:

While Jonathon does turn his head to avoid certain foods, the turn is always to the left. He is not, at this time, able to turn his head to the right. Since the turn is only in one direction, it can not be used as a choice response. Eventually, perhaps after facilitator training provided by an Occupational Therapist or Physical Therapist, the response may be developed into a more discrete response of turning the head to the right for one item, and to the left for another.

For the time being, it should be possible to train Jonathon to turn his head to request more bouncing on the physical therapy ball by using the procedures suggested in the REQUESTING MORE objective.

Case Study #2 Joey

Joey is a profoundly retarded ambulatory child, who appears to have normal hearing and vision. He uses some speech sounds; however, these are not under imitative control. Other potential responses included eye gaze, head movements, and reaching. The only communicative behaviors the child uses are occasional vocalizations.

Pointing is selected as the best response to begin training, for reasons discussed earlier. Because pointing is a good choice response, the first training objective will be REQUESTING THROUGH CHOICE. Joey particularly enjoys mealtimes and smoke and likes a wide variety of foods. The procedures suggested in REQUESTING THROUGH CHOICE should quickly enable Joey to communicate genuine choices regarding preferred foods.

Case Study #3 Kathleen

Kathleen is a child who has been in language training for several years. She has good ability to imitate manual signs.

However, she never uses signs communicatively. While she is not profoundly retarded, there are few things she enjoys or wants from the environment, and thus appears very dull. The only thing she really enjoys is being pushed in the playground swing.

A symbolic response, the sign for "swing" is selected as the best response. Thus the procedures described in the REQUESTING THROUGH SPEECH AND SIGN can be used to teach Kathleen to request her favorite activity. The goal of this objective will be to enable Kathleen to request "swing" even when the swing is not in sight.

It should be noted that these guidelines are flexible, and no child need ever be locked into one objective. Many teachers have found that some children may use one type of request for one reinforcer and a different different type for another reinforcer.

Example

Allen has had many years of language training, but has no functional communication skills at the beginning of training with the CCC Program. He has, however, learned one sign: the sign for "cookie". Fortunately, he happens to like cookies. He also has the ability to reach and can approximate a pointing response. One of his favorite activities (in addition to eating) is being pulled in a small wagon. It was observed through Identification of Wants and Needs, that occasionally when the teacher stopped pulling him in the wagon, he moved his head up and down, as if to say "Let's go".

It was decided by the teacher that several communication training objectives were appropriate for Allen:

REQUESTING MORE. First, the head shaking response was trained as a "more" response to request more wagon pulling, i.e., whenever the teacher stopped pulling him, he would shake his head up and down, and the teacher would start pulling again.

REQUESTING THROUGH CHOICE. Second, his reaching response was shaped into a pointing response which he used to request various foods at snack or meal times. Eventually pictures of these foods were placed on a communication board by using the procedures described in REQUESTING THROUGH COMMUNICATION BOARD.

REQUESTING THROUGH SIGN. Finally, he was encouraged to use the sign that he had learned to request "cookie" whenever that happened to be the food item he wanted.

TRAINING THE RESPONSE

There is a general teaching strategy which is used, with some adaptations, with each of the communication objectives in this curriculum. (see Figure 9). The procedure is designed in an effort to reduce the number of teacher controlled cues necessary to produce an appropriate communication response from the child. Thus, a key feature of the procedure is a substantial pause at the beginning of each training interaction in which the child has ample opportunity to use the communicative behavior without verbal prompts such as "Tell me what you want", or "Say juice". If the child does not respond within the pause period, the procedure then provides a series of cues and prompts which are rank ordered according to the degree of independent responding required from the child, i.e., they represent progressively greater teacher control in obtaining the response from the child the teaching strategy can be summarized as follows:

1. SET UP THE COMMUNICATIVE SITUATION.

   Set up a situation in which the high-preference item to be requested is available. (For example, place child at snack table with juice and cookies nearby, or take child to play area near record player, etc.).

2. LOOK EXPECTANTLY AT CHILD, AND PAUSE AND WAIT.

   Attend to the child intently as though you expect him to request something, and wait approximately 20 seconds, giving the child ample time to make a response without a cue or prompt from the teacher.

   a. If the child does not respond, go to #3 below.
   b. If the child attempts to respond, but does so incorrectly, shape the correct response and comply with the request.
   c. If the child responds correctly, comply with the request.

3. PROVIDE VERBAL CUE.

   Say to the child "What do you want?", or "Do you want some juice?", or "Tell me you want some juice", or some other verbal cue.

   a. If the child does not respond, or responds incorrectly, go to #4 below.
   b. If the child responds correctly, comply with the request, as in #5.

4. PROMPT AND SHAPE.

   Prompt and shape the correct response, using good fading techniques to eliminate the child's dependence upon this level of prompting as

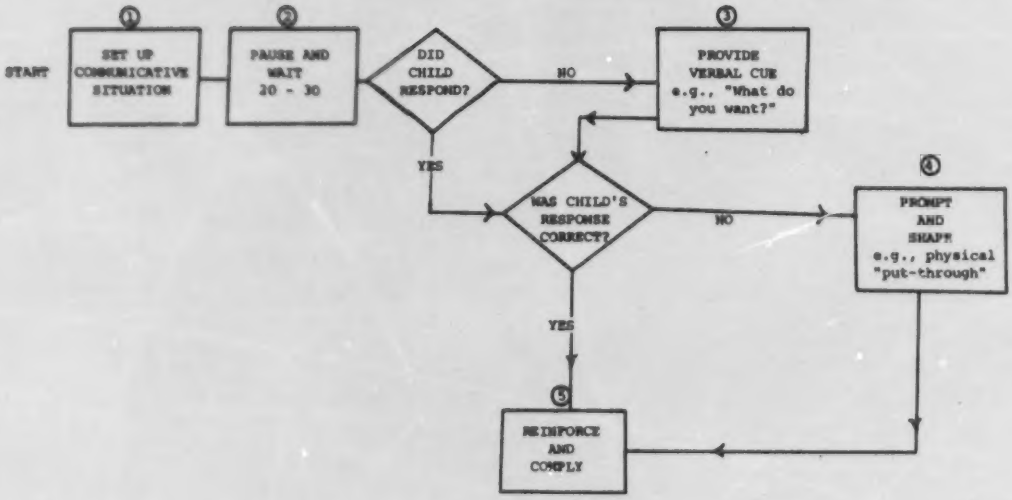


Figure 9:

Communication Training Flow Chart

quickly as possible (See Appendix F, "Response Development and Data Collection").

5. COMPLY (REINFORCE).

In the initial stages of response training it is important that the child always eventually receive the item or activity being requested, even when the correct response must be physically prompted. In later stages of training this may not always be the case (See "Procedures" sections under each objective).

The procedure described above should be repeated several times in each training episode.

OBJECTIVES and PROCEDURES

REQUESTING MORE

GOAL:	Within 20 - 30 seconds of the teacher's termination of a pleasurable activity, the child will produce a response to signal the desire for more of that activity.
RATIONALE:	The low functioning child with severe response limitations should have some means of making his wants known, and should be able to learn that a response which he produces is capable of having some communicative effect on his care-givers. A very simple way to accomplish this is by providing the child with a signal which he can use to signal that he wants "more" of something. Once the teacher has presented an item or activity initially, virtually any response can be used as a signal for more.

Description

For the child who is very severely impaired, the most easily taught requesting behavior will often be the Request for More. In this objective a high-preference item or activity is presented briefly, then terminated. The item or activity is presented again only when the child makes a response to indicate that he wants "more".

ANY RESPONSE, NO MATTER HOW SIMPLE CAN BE USED TO SIGNAL THE REQUEST FOR MORE, INCLUDING HEAD TURNS, EYE BLINKS, BODY MOVEMENTS, VOCALIZATIONS, ETC.

Procedures

A. Select the specific response to be used to indicate "more".

Using data obtained from the Caregiver Interview, and Identification of Wants and Needs, select the response to be trained. The following considerations are important.

1. Whenever possible, the child should already be able to make the response with minimal prompting.

   For example, pointing might be selected as a response for a child who already occasionally points, and will imitate a pointing model from the trainer. On the other hand, pointing would not be a good response selection for a severely spastic child who has limited control of his limbs.

2. The response must be discrete.

   An observer must be able to tell when and whether the response has occurred; it must be clear when the response has begun and when it has ended. For example, a head turn, which is so slight that it is barely identifiable in a child who has very limited mobility, or hand movements in a child who is constantly engaged in self-stimulatory finger play, would not make good responses to be used to indicate "more". Of course some students are so physically impaired that there is little choice in the selection of a response. In these cases, the teacher must begin with <u>any</u> response the child can make and build upon that response.

   NOTE: Response distinctiveness may be increased by careful response definition. For example, a time limit may be imposed. i.e., the response must occur within a given number of seconds. Or, a response chain may be required such as eye contact with the trainer followed by a vocalization.

B. Select the high-preference item or activity the child will request "more" of.

e.g., drinking juice.

C. Select the situation in which to train the response.

e.g., snack time.

D. Training Steps.

1. <u>Present</u> the high-preference item or activity briefly.

e.g., give child small sip of juice.

2. Terminate the presentation of the item or activity.

   e.g., withhold juice.

3. Look expectantly at child and pause and wait 20 - 30 seconds.

   a. If the child makes the response selected to indicate "more", present the item or activity again. (Reinforce and comply as described in 4 below).

      e.g., If child lifts his head within 20 - 30 seconds, child receives another sip of juice.

   b. If the child does not respond, or responds incorrectly, prompt the correct response.

      e.g., Physically lift the child's head.

4. Reinforce and comply by saying "Oh, you want more ____!", and providing more of the desired item or activity.

   e.g., Teacher says "Oh, you want more juice", and gives child another sip of juice.

5. Repeat steps 1 through 5 above.

   NOTE: Once the response has been trained, if the child makes no response, terminate the session. This may be a brief delay of access to the high-preference activity, or access may be withheld until another training session later in the day. If the child continues to make no response it may be necessary to do one of the following:

   a. Evaluate the prompting procedures to insure prompts are being properly faded (See Appendix F).

   b. Select another response.

   c. Select another high-preference item or activity.

Criterion

If the child correctly produces the response for "more" on approximately 80% of the training trials for 3 out of 5 days, proceed to Generalization Training below.

Generalization

Once the child consistently uses the response to request "more" in the structured training setting, the response should be generalized in the following ways.

A. Generalize the response to other high-preference items and activities.

e.g., The student has reached criterion on a more response (saying "ah" for more music during a free play period) and the teacher begins using the same response for juice at snack time.

B. Generalize the response to other trainers.

e.g., The student is trained to use a head turn for more music when working with occupational therapist.

NOTE: Generalization is likely to be facilitated during training if different teachers are employed.

C. Generalize the response to other settings.

Head turning to the right is the "more" response for juice during snack time in the classroom. The same response and reinforcer may be used in the lunch room or at home.

REQUESTING THROUGH CHOICE

GOAL:	When presented with an array of two or more items, the child can make a selection response indicating his preference for a particular item. The response will be a non-symbolic response such as pointing or directed eye gaze.
RATIONALE:	Most severely multiply handicapped children are unable to learn to make a symbolic request. A choice selection response will enable them to express wants and needs when the desired item is visible and within the child's proximity. In addition, for the child who is not a candidate for speech or sign, a choice response such as pointing provides an important transition step to communication board use.

Description

This section trains the child to make a choice response using such behaviors as pointing or directed eye gaze. The goal of this objective is that the child use such a response to indicate his wants by selecting one particular item from among two or more items in a choice array. The ideal behavior to train as a choice response is a pointing response. If the child is unable to make a pointing response, other responses can be used. These are often responses which are somewhat less distinct, such as directed eye gaze or head turning.

There are several steps to the choice training objective, each representing different stimulus conditions under which the choice response is taught. Each of these steps and suggested procedures is presented below. Figure 10 summarizes these steps.

Figure 10

Suggested Steps of REQUESTING THROUGH CHOICE Objective

STEP	STIMULUS CONDITION	RESPONSE
1	One high-preference item in a fixed position	Child must make the selected choice response to obtain high-preference item (similar to "Requesting More" procedure after first trial).
2	One item in any position	Child must search for the item visually (unless blind) then make choice response.
3	Two items, one high-preference, one low-preference	Child must discriminate between reinforcing and disliked items.
4	Two or more high-preference items	Child makes genuine choice response by selecting from among two or more reinforcing items.

As discussed earlier under Response Selection, the response to be trained to make a choice must be one which can be taught quickly and easily. If a child is not progressing well through this objective, in most cases the trainer can assume one of the following reasons:

A. The response selected is too difficult for the child, and a simpler response should be selected for initial training. More difficult responses can be learned later, after the child has learned the basic communicative function of requesting wants.

OR

B. The high-preference item that the child is learning to request is no longer a strong reinforcer for the child. The success of this entire curriculum rests upon the identification of truly "high-preference" items and activities. Thus, it may be necessary to return to the first component of the curriculum, "Identification of Wants and Needs".

Procedures

A. Select the item (or items) to be requested, depending upon the training step (see below).

e.g., Dessert

NOTE: In those cases where several high-preference reinforcers have been identified for a child, the teacher need not use the same reinforcer in every training session. Using a variety of high-preference reinforcers will not only help avoid satiation, but will also facilitate stimulus generalization. It should be noted that a child must have at least two identified high-preference reinforcers in order to progress beyond step 3 of the Choice Training procedures to step 4 which is choosing from two or more high-preference items.

B. Select the choice response to be trained.

e.g., pointing

C. Select the situation in which to train the response initially.

e.g., lunch time

D. Training Steps.

1. One Item, Fixed Position

The child is trained to point to (or look at, reach for, etc.) one high-preference item, when that item is placed directly in front of him. This procedure establishes the choice response, prior to actually requiring the child to choose from among two or more items.

a. Place the desired item just out of the child's reach, but within sight.

e.g., Place dessert across table from child

b. Look expectantly at the child, and wait for 20 - 30 seconds.

1) If the child correctly makes the choice response being trained (e.g., pointing or looking at item), reinforce and comply with request.

e.g., Child points toward dessert. Trainer says "Oh, you want dessert now". Trainer gives child bite of food.

2) If the child responds incorrectly, shape the correct response and reinforce and comply as above.

e.g., Child grabs for dessert. Trainer physically puts child through correct pointing response, then gives child bite of dessert.

3) If the child makes no response, use a verbal cue such as "What do you want?", or "Do you want the ____?"

e.g., The child does not make a response. Trainer says "Do you want some dessert?"

a) If the child still does not respond, or responds incorrectly, prompt and shape the response.

e.g., Physically put child through pointing response.

b) Reinforce and comply with child's request.

e.g., Give child bite of dessert.

NOTE: In later sessions, once the child has learned the choice response, it is no longer necessary to end each trial with positive reinforcement. At some point the child must learn that if he does not make the request response, he does not get the high-preference item or activity. This is important because the ultimate goal of this curriculum is not simply training a particular behavior, but making that behavior functional and under the child's own control. This implies that the child must also

have the option of not wanting the high-preference item on some occasions. If the teacher always eventually prompts the correct response and provides the high-preference item, then the child has little control over the communicative situation).

2. One item, Any Position

The child is trained to point to (look at, reach for, etc.) one high-preference item, when that item is placed in any position, i.e., to the right, left, or midline. This procedure insures that the child can not only make the response, but that he is actually directing that response toward the desired item.

The procedures for Step 2 are the same as for Step 1, except that the position of the item is changed on each trial. Thus, the child is required to search out the item and direct the choice response toward it, whatever its position.

3. Discriminating High- and Low-Preference Items

This step attempts to insure that the child can actually make a choice, i.e., that the child chooses one particular item in preference to another. Thus, the trainer selects one "low-preference" item to be paired with the high-preference item. A low-preference item is something the child dislikes. For example, if a child hates having his face washed, the trainer could select a washcloth as the low-preference item. If the child chooses (e.g., points to) the washcloth, he receives the natural consequence of that choice, which is having his face washed. If the high-preference item used in the procedure is, in fact, a strong reinforcer, eventually the child should be discriminating the two choice options, and intentionally selecting the desired item.

a. Select one low-preference (disliked) item and one high-preference item to be used as the choice options. Place both items within the child's visual field, one to the right of midline, and the other to the left of midline.

b. Training steps are similar to Steps 1 and 2 except that two choice options are now presented to the child rather than one.

e.g., The child is presented with a washcloth and a piece of cake.

1) If the child selects the high-preference item, he receives the high-preference item as always.

e.g. The child points to the cake and is given a bite of cake.

2) If the child selects the low-preference item, he receives that item.

e.g., The child points to the washcloth and gets his face washed.

3) If the child makes an incorrect choice response (i.e., if the topography of the response is wrong, not if he chooses the wrong thing) prompt and shape the response as described in earlier phases. In most cases relatively little shaping and prompting of the response should be necessary, since completion of Steps 1 and 2 of choice training should insure that the response itself (though perhaps not the function of the responses) has already been learned.

NOTE: If the child frequently selects the low-preference item, but continues to demonstrate that he does not, in fact, want that item, then it can be concluded that the child is not actually discriminating and selecting a desired item. It may be necessary to adjust the procedures in some way to make the choice items more salient, (e.g., move objects closer, use larger or brighter objects, etc.).

4. Choosing From Two or More High-Preference Items

Once the child has demonstrated in Step 3 that he can identify and select the high-preference item, two or more high-preference items can be presented to the child. The presentation of two or more high-preference items, e.g., juice and chocolate milk at lunch time sets up a genuine communicative situation. The child communicates information, i.e., his preference, to the teacher, and thereby controls an aspect of his environment, i.e., the teacher complies and provides the desired item or activity.

Procedures are the same as for Step 3, except that the choice options presented to the child are all high-preference items. Two or more items may be presented, depending upon the child's abilities and the number of high-preference items identified for the child.

e.g., The child is presented with three dessert choices: pie, ice cream, and pudding.

Criterion

A criterion must be met at the end of each training step. Generally a criterion of approximately 80% correct on 3 out of 5 days (or sessions) is adequate.

Once the child is able to make a choice from among 2 or more high-preference items, training may proceed to any or all of the following:

A. Generalize the choice response as discussed below under GENERALIZATION TRAINING.

B. Train the child to choose between pictures of desired objects by proceeding to REQUESTING THROUGH PICTURE COMMUNICATION BOARD.

C. Train the child to signal to initiate communication via the INITIATION TRAINING objective.

Generalization

Once the child has learned to choose from two or more high-preference items in the structured training setting, the response must be generalized as follows:

A. Generalize the response to other settings.

e.g., A pointing response trained in the classroom at snack time can be extended to mealtimes both at school and at home.

B. Generalize the response to other trainers.

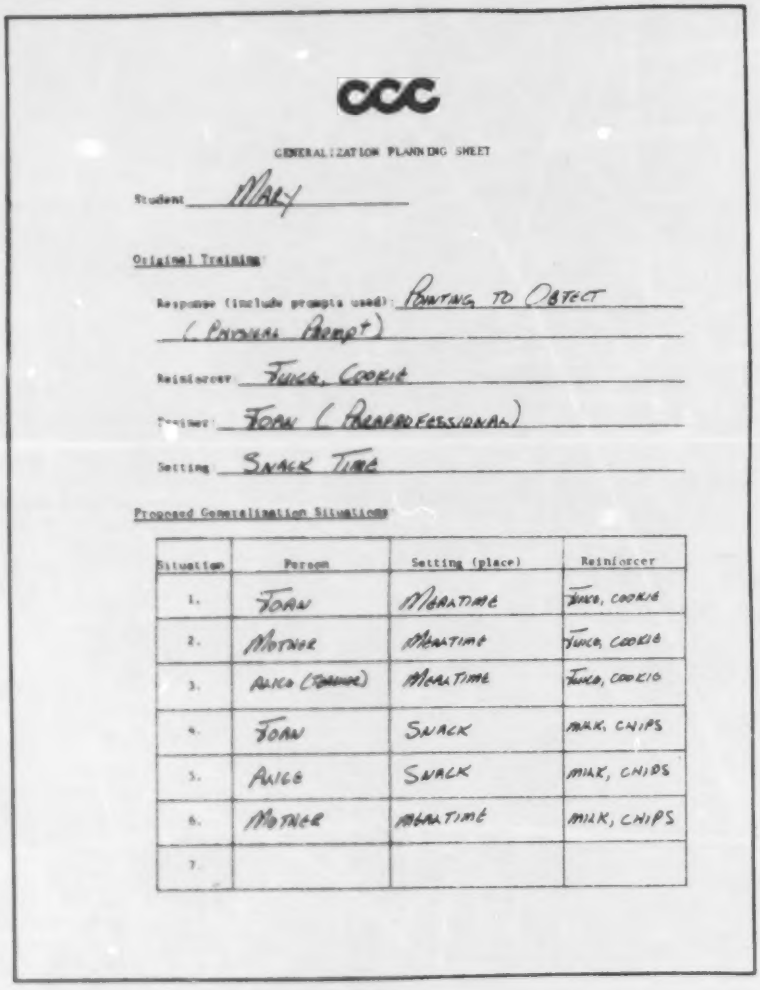
e.g., Use different classroom staff, and involve parents in training.

C. Generalize the choice response to other reinforcers.

If the teacher has been using the same high-preference items throughout training, the choice response can be generalized to other reinforcers by simply varying the high-preference items used in regular training setting.

e.g., Rather than having the child choose between juice and cookies each day, cheese and chocolate milk could be added or substituted in the choice array.

The sample data sheet in Figure 11 demonstrates generalization of a choice response.



CCC

GENERALIZATION PLANNING SHEET

Student: MARY

Original Training

Response (include prompts used): POINTING TO OBJECT (PHYSICAL PROMPT)

Reinforcer: JUICE, COOKIE

Trainer: JOAN (PARAPROFESSIONAL)

Setting: SNACK TIME

Proposed Generalization Situations

Situation	Person	Setting (place)	Reinforcer
1.	JOAN	MEALTIME	JUICE, COOKIE
2.	MOTHER	MEALTIME	JUICE, COOKIE
3.	ALICE (CLASSMATE)	MEALTIME	JUICE, COOKIE
4.	JOAN	SNACK	MILK, CHIPS
5.	ALICE	SNACK	MILK, CHIPS
6.	MOTHER	MEALTIME	MILK, CHIPS
7.			

Figure 11: Sample Generalization Planning Sheet

REQUESTING THROUGH PICTURE

COMMUNICATION BOARD

Communication boards are frequently the most preferred initial mode of communication for severely multiply handicapped students who are nonvocal. First, they require only simple motor skills. Additionally, the "symbols" on the board can be very concrete which requires lower cognitive skills than either signing or speech. However, boards are a very artificial system of communication. As such, this mode presents unique assessment and training considerations. This objective provides training guidelines for beginning a communication board.

The training for this Objective consists of two Phases. The first phase concurrently teaches the prerequisite skills of pointing to pictures and of object/picture matching. The second phase teaches the actual use of the board.

Not all students in this objective will need to receive training in both phases. Some who exhibit good visual scanning and pointing skills may begin in Phase II. There may be some students who have already acquired some use of a communication board. For these children the training emphasis should be on making the board functional (Phase II) and Facilitating Spontaneous Use (see TRAINING THE CHILD TO INITIATE COMMUNICATION and ENVIRONMENTAL MANIPULATIONS TO FACILITATE SPONTANEOUS USE).

Only students for whom a board is the appropriate communication mode should receive training in this Objective. The decision to use this mode should be made following procedures like those in Appendix E.

NOTE: The procedures in this objective are written for children exhibiting fairly good hand pointing skills. Whenever possible suggestions are provided for adaptations for the severely physically handicapped.

COMMUNICATION BOARD, PHASE I
Choosing Pictures (Paired with Objects)

GOAL: The child will request an object within view by pointing to a picture of that object.

RATIONALE: The purpose of teaching a child to point to a picture rather than the actual object is that it increases the functionality of the response. It will no longer be necessary that the desired item actually be visible. The child can communicate a desire for something not present by pointing to a picture representing the item or activity. The communicative response is more under the child's own control; the child can request the desired item whenever he wants it if he does not have to depend on the actual physical presence of the item itself.

The pictures are not attached to a board in this Phase for two reasons. Some students will not visually scan two or more pictures without being taught to do so. Scanning is a necessary skill for discriminating multiple pictures on a communication board. Secondly, some students will need specific shaping of their pointing response in order to generalize from pointing to objects to pointing to pictures.

Description

Phase I is a transition step which facilitates the beginning of communication board development. Procedures are similar to those used in the previous Objective to prompt and shape pointing to objects.

Example

Jason had been trained to use directed eye gaze at snack time to request juice and chips. To begin training the Requesting Through Picture Communication Board objective, pictures of these two foods were drawn on 5" x 8" cards. Initially, the pictures were placed in front of the actual objects, one on the left side of the table, and one on the right. Jason was trained to look at the picture to obtain the desired food.

Once Jason met criterion using the loose pictures, he began Phase II. The size of the pictures was reduced to approximately 3" x 5", and they were placed on an 18" x 24" board, one in the lower left corner, and the other in the upper right corner. The objects themselves were then removed from view. Once Jason's use of eye gaze was reliable within this smaller field, a third picture, crackers, was added to the board.

Procedures

A. Before beginning training, determine through observations, probing, and parental interviews that this student is indeed a candidate for a communication board. Procedures for mode selection are outlined in Appendix E, "Selecting a Primary Communication Mode".

B. Select one desired item or activity to be requested and the situation in which to train. Also select one low-preference item or activity to be used in Training Step 3.

e.g., Cake at lunch time as high-preference, washcloth as low.

C. Considering the student's visual, cognitive, and motor skills, select and prepare the most appropriate picture of the item(s). Appendix D, "Communication Boards" presents procedures to assist you in this process (see "Vocabulary Display", section of Appendix D).

e.g., Black outline drawing on a white 3" x 5" card.

D. Training Steps.

1. One picture, fixed position.

a. Place the desired item just out of the child's reach, but within sight.

e.g., Place dessert across table from child.

b. Place the picture within the student's reach. Place the picture in the same position for each trial. For a correct response, the picture must be somewhat removed from the object.

c. Look expectantly at the child, and wait for 20-30 seconds.

d. If the child points to or touches the picture (physically handicapped may simply look or stare at the picture), reinforce and comply with request.

e.g., Child touches picture. Trainer says "Oh, you want cake now". Trainer gives child bite of cake.

e. If the child responds incorrectly shape the correct response and reinforce and comply as above. One common shaping procedure for this step is to place the object <u>on</u> the picture in early training, then gradually moving the item and picture apart.

f. If the child makes no response, use a verbal cue such as "What do you want?", or "Do you want the ____?"

e.g., The child does not make a response. Trainer says "Do you want some dessert?"

g. If the child still does not respond, or responds incorrectly, prompt and shape the response.

e.g., Physically put child through pointing response.

h. Reinforce and comply with child's request.

e.g., Give child bite of dessert.

NOTE: In later sessions, once the child has learned the pointing response, it is no longer necessary to end every trial with positive reinforcement.

i. Train pointing to one picture in that same position to criterion then progress to the second step.

2. One picture, any position.

The procedures for this second step are the same as for step one,

except that the position of the picture is changed on each trial. Suggested positions may vary from far right, to far left, to midline. The trainer may also want to vary how close the picture is placed on a vertical plane. Thus, the child is required to search out the picture and direct the choice response toward it.

Train to criterion then begin the third step. Some students may be able to progress to Phase II at this point.

3. Discriminating Pictures of High and Low-Preference Items.

   a. Training steps are similar to the first steps except that two choice options and two pictures are now presented to the child rather than one. Select one low-preference (disliked) item and one high-preference object. The objects are placed out of the students reach. The pictures are placed within reach. Pause and wait for the child's response.

      e.g., Child is presented with a washcloth and a piece of cake, and a picture of each.

   b. If the child selects the high-preference picture, he receives the high-preference item as always.

      e.g., The child points to the cake picture and is given a bite of cake.

   c. If the child selects the low-preference picture, he receives that item.

      e.g., The child points to the washcloth picture and gets his face washed.

   d. If the child makes an incorrect pointing response (i.e., if the topography of the response is wrong, not if he chooses the wrong thing) prompt and shape the response as described in earlier phases. In most cases relatively little shaping and prompting of the response should be necessary, since completion of "Choice Training" should insure that the response itself has already been learned.

      NOTE: If the child frequently selects the low-preference item, but continues to demonstrate that he does not, in fact, want that item, then it can be concluded that the child is not actually discriminating and selecting a desired item. It may be necessary to adjust the procedures in some way to make the choice items more salient.

   e. Once the child is consistently pointing to the high-preference picture over the low-preference picture, consistently (e.g., 80% correct, 3 out of 5 days), proceed to Step 4, Choosing from Pictures of Two High-Preference Items.

4. Choosing from Pictures of Two High-Preference Items.

Procedures are the same as for the previous step except that the choice/options and pictures presented are both high-preference items.

e.g., The child is presented with two dessert pictures: pie and ice cream.

Once the child is responding at criterion to these two pictures progress to Phase II.

COMMUNICATION BOARD, PHASE II
Placing Pictures on a Communication Board (Objects Removed)

GOAL:	The child will request an object which is not in sight by pointing to a picture-card of that object attached to a communication board.
RATIONALE:	All too often communication boards function as only "picture boards". That is, the children learn to point to the pictures when shown the objects, but they rarely point to the pictrues to communicate that they "want" that object. Communication board training must have as its primary target the function or use of the symbols.

Description

This training represents a milestone for students. In this Phase, their pointing and matching skills (taught in the earlier Phase) are refined, and a "system" of communication is begun. The child is taught to request desired items as in earlier steps. However, instead of having picture cards placed randomly on the table, the child points to (or otherwise indicates) cards attached to an actual board. In addition, by the completion of this phase, the actual items are no longer visible to the child.

e.g., The child was taught in the last step of Phase I to choose between two pictures at dessert time. In this Phase, after careful planning, the pictures are reduced into slightly smaller cards, and placed in a predetermined fixed order onto a certain type of communication board. Now, during dessert time, the child is given the board and may point to either card to choose the one she wants to eat.

Procedures

The communication board system initiated in this Step should eventually become an integral part of the student's life. As such, it must be planned and taught with careful consideration of several variables.

A. Complete the planning sheet "Communication Board System Selection" from Appendix D, "Communication Boards", to determine the most appropriate board for this student.

B. Construct the board. Follow procedures to insure board portability which are discussed in Appendix D.

C. Continue to use the situation used in earlier Phase as your training setting.

e.g., lunch time.

D. Training Guidelines.

1. Initially, put only those symbols on the board which you know through earlier training the child can use or those which will be used in current training. Many students will begin training with only two pictures on their board.

2. Expand the vocabulary by no more than one or two pictures each time criterion is achieved on current items.

3. Initial size and placement of the symbols on the board should have been determined before training began. However, as training continues, many students will be able to use successively smaller symbols, placed gradually closer together on the board. Decreasing the size and placement of the symbols is usually best done during generalization training. Depending on the student's skills it may be best to decrease size then placement distance, and not both at the same time. New symbols being added to the board can usually be of the smaller size and closer placement. If the student has difficulty with the new symbols being small and/or close together, simply increase their size or placement for a few sessions.

4. The vocabulary display on the board should remain stable relative to the other symbols on the board throughout training.

e.g., Although the symbols for "pie" and "cake" were moved closer together on the board, they always remained next to one another; "pie" on the left, "cake" on the right.

E. Training Steps.

1. Items paired with board symbols.

a. If the board is not permanently attached to the student's wheelchair, either give the board to the student or have him get it.

b. Place two of the objects symbolized on the board within the student's view but out of reach.

c. Look expectantly at the child and wait 20 - 30 seconds.

d. If the child makes the correct response, reinforce and comply with request. The correctness of the response does not hinge on which object the child chooses, as either object may be "preferred". Rather, a response is correct if it meets the definition of how the response is to be made.

e.g., Child stares at the symbol for "ice cream" for 5 seconds then looks up to the teacher. Teacher says "Good! You want ice cream today?", and lets the child have a bite. If the child had stared for less than 5 seconds or failed to look up to the teacher, the response would not have been correct.

e. If the child responds incorrectly, shape the correct response and reinforce and comply as above.

e.g., The child (who has been trained to use a hand pointing response) points close to, but not on, the symbol for cake. Trainer physically puts child through correct pointing response, then gives the child bite of cake.

f. If the child makes no response, use a verbal cue such as "What do you want?", or "Do you want the ____?"

e.g., The child does not make a response. Trainer says "Do you want some dessert?"

g. If the child still does not respond, or responds incorrectly, prompt and shape the response.

e.g., Physically put child through pointing response.

h. Reinforce and comply with child's request.

e.g., Give child bite of dessert.

NOTE: As discussed earlier, once the student has learned to respond to the board as opposed to loose pictures, it is no longer necessary to end each trial with positive reinforcement. In later training, the student must learn that by not asking, or asking in an unintelligible way, the item will not be offered. The students also retain the right to not want any of the items offered.

2. Using communication board with objects removed.

The procedures for this step of training are exactly the same as in the first step except that the items are removed from view. Some students will need some prompting before they are able to respond with the objects out of sight. For these students, the objects may need to be briefly shown to them before each trial. This is a prompt, however. To achieve criterion, the student must respond without seeing the objects.

3. Adding additional pictures.

Following the Training Guidelines presented earlier, and the long-range planning completed before training was begun, additional pictures may be added to the board as needed using Step 1 and 2 training procedures. Remember, use only symbols representing high-preference items or activities, and eventually, high need items or activities. Space is at a premium on boards. Do not waste it on nonfunctional vocabulary. Each picture must be generalized across settings and trainers before adding a new picture to the board.

Criterion

Criterion is achieved on each item when the child selects the picture-symbol on the board with the item out of sight within the structured training setting approximately 80% of the time for 3 out of 5 days. When this occurs the trainer should proceed to Generalization and Environmental Manipulation Training. These two types of training are the priority follow-up to this Objective for each picture taught. It is only through these latter procedures that functional use of the board communication can be assured.

NOTE: Once the student has achieved functional use of the several pictures on the board in Phase II, the teacher may want to begin some facilitator training to further develop the student's understanding of the pictures. See Appendix D, "Communication Boards", for Facilitator Program for Vocabulary Expansion.

Generalization

If training was not conducted concurrent in the home, the child should now be given a board to use at home.

As with all other objectives of this curriculum, the training should systematically introduce varied items (chocolate cake, bundt cake, etc.), trainers (paraprofessional, speech pathologist, etc.) and settings (snack, lunch) to insure the generalized function for the symbols.

A final generalization concern unique to baord users must also be addressed. If at all possible the student must be taught to carry the board with them at all times. If this is not possible because of a physical handicap, the adults in the environment must commit themselves to this task. Appendix D presents suggestions to help with this task.

NOTE: There will always be occasions when the child will need to communicate and the board will not or cannot be avilable. Additionally, there will be wants or needs which the child may need to communicate that will not yet be symbolized on the board. Because of these situations it is strongly suggested that the students be taught to not only use their board but to point to objects or people, etc., when their board is not available. For some students this will mean maintaining a previously taught response. For others, it will mean teaching a new response. Procedures for this training are discussed in the REQUESTING THROUGH CHOICE Objective.

USING SPEECH OR SIGN

TO REQUEST WANTS AND NEEDS

GOAL:	The child will request high-preference items which are not in sight, using a signed or spoken response.
RATIONALE:	Some severely handicapped children may be able to use speech or manual signs for certain requests. For those children for whom this is an appropriate response selection, speech or sign has the advantage of immediately enabling the child to request items or activities which are not immediately present.

Description

In this objective the child will be trained to request high-preference items when those items are not visible.

Procedures

A. Using Appendix E, "Selecting a Primary Communication Mode", determine whether speech or sign is an appropriate response mode.

B. Select the response to be used to make the request.

e.g. Playing catch.

C. Select the response to be used to make the request.

e.g., The sign for "ball".

D. Select the situation in which the response is to be trained.

e.g., Free play time, following lunch.

E. Train the response.

1. Set up the situation associated with the high-preference item or activity.

e.g., Move to play area, get out toys, including favorite ball.

2. Show high-preference item to child.

3. Remove item from view.

e.g., Teacher places ball behind screen, or under table.

4. Look expectantly at child and wait 20 - 30 seconds.

a. If child requests item, reinforce and comply.

e.g., If child signs "ball", say "Oh, you want to play ball", and play catch with child.

b. If child responds incorrectly, prompt the correct response and reinforce and comply.

e.g., If the child signs "ball" incorrectly, model correct response. Reinforce child's corrected response by saying "Right, you signed ball!", and then play catch with the child.

c. If the child makes no response, provide verbal cue as described below.

5. Provide verbal cue, "What do you want?"

a. If the child responds correctly, reinforce and comply.

b. If the child responds incorrectly, prompt and shape correct response and immediately comply.

c. If the child makes no response,

1) prompt and shape as described in 6 below, or

2) in later sessions, when the teacher believes the child knows the response, terminate access to the high-preference activity. The teacher may either terminate the session briefly (similar to a time-out procedure) or end the session altogether until a later time.

6. Prompt and shape. The correct response is prompted and/or shaped depending upon the child and the response. A typical prompt might be an imitative model (e.g., the teacher says "Do this", and demonstrates the sign for ball), or various physical "put-through's" (e.g., the teacher actually places the child's hands and fingers in the correct position for the sign "Ball". After several training sessions, simply bringing the item back into sight briefly may prompt the correct response.) Shaping involves the gradual fading and reduction of physical prompts and/or the reinforcing of successively closer approximations of the correct response. (See Appendix F).

7. Reinforce and comply. All correct, or approximated responses should result in the child's obtaining the high-preference item or activity. Teachers should say "Oh, you want ____", and immediately provide the item. In later sessions, after the response has been trained, the teacher may choose not to comply if the child makes no response.

Criterion

When the child correctly requests the item approximately 80% of the time on 3 of 5 days, proceed to any or all of the following generalization strategies.

Generalization

A. Generalize the response across settings and trainers, especially home environment.

e.g., Child requests "ball" at home with brother.

B. Proceed to SPONTANEOUS USE component of curriculum.

C. Train child to request another reinforcer.

INITIATIONS

TRAINING THE CHILD TO INITIATE COMMUNICATION

GOAL:	The child will employ some acceptable means of signalling the teacher's attention in order to engage in a communicative interaction (i.e., making a request). For non-ambulatory children, this signal will necessarily be an audible one, such as a vocalization, or use of a bell or buzzer.
RATIONALE:	A communication interaction between two persons requires an initial establishment of social contact between those two persons. In other words, before the child can communicate a request, it is necessary to get the attention of the person to whom the request is to be addressed. This is a pragmatic function of communication which becomes even more crucial for the child who is severely handicapped and totally dependent upon others to meet his or her needs. Furthermore, the ability to initiate a communication interaction facilitates the spontaneous use of requesting behaviors taught in the previous section.

Description

The ultimate goal of the CCC Program is the spontaneous, functional use of communication to request wants and needs. In order for this to occur, the child must not be dependent upon the teacher to initiate communication. This section, TRAINING THE CHILD TO INITIATE COMMUNICATION, and the section following, ENVIRONMENTAL MANIPULATIONS TO FACILITATE SPONTANEOUS USE, are designed to train the child that requesting behaviors which were learned in the REQUEST TRAINING SECTION can be initiated and controlled by the child himself.

This section provides those children who do not presently initiate communication with means of signalling the teacher's or parent's attention in order to communicate a request. In addition those children who initiate in inappropriate ways can be given more acceptable responses with which to initiate communication. The ENVIRONMENTAL MANIPULATION procedure discussed

in the next section, simultaneously sets up the need to initiate and to make a request. Thus, the ability to initiate a communicative interaction is a prerequisite to the successful use of that technique.

The procedure used in initiation training is, briefly, as follows: The teacher sets up the communication situation as in REQUEST TRAINING. Rather than beginning with the "Look expectantly" step of the teaching strategy, the teacher does not look at the child. The child is trained to use an audible signal to get the teacher to attend before the child can make the request. Thus, in this objective the initiating response is chained to the beginning of the child's requesting response. Gradually the teacher moves further and further away from the child, so that eventually the child can initiate without the teacher's eye contact or physical proximity.

Example

Tommy was a seven-year-old boy with severe spastic quadriplegia. He had no use of his limbs, but was able to use directional eye gaze, move his head, and vocalize. Through THE REQUESTING THROUGH CHOICE objective, Tommy was able to learn to use directional eye gaze to request various items by looking at large picture placed on a board. He was however, dependant upon his teacher to set up the communicative situation.

The teachers had observed that often when no one was interacting with Tommy he would make a sort of cooing sound. Since they suspected that Tommy was occasionally using this sound to get attention anyway, they decided to systematically train Tommy to use the vocalization to initiate communication. At snack time, Tommy's board was placed nearby, and Tommy was seated at the snack table. The teacher did not attend to Tommy until he made a cooing sound. Using the standard teaching procedure, the teacher then waits 20 - 30 seconds for Tommy to use his eye gaze to request snack items. Eventually, Tommy would spontaneously initiate communication in order to obtain items represented on his communication board.

Procedures

A. Select the response to be used to initiate communication. The response must be one which can be used to signal the teacher's attention when the teacher is not attending to the child. It must be a response which is not irritating to others.

e.g., Ringing a bell.

B. Select a situation in which to initially train the initiating response.

e.g., Free play time.

C. Training Steps.

1. Set up the communicative situation as for request training. (See page 41) If the child's request response requires the use of pictures or communication board, make sure these are nearby.

e.g., Place child in front of toy shelf.

2. Turn around, facing away from the child.

3. Wait 20 - 30 seconds for the child to respond.

a. If the child makes any response in an attempt to gain the teacher's attention, immediately attend to the child, shaping the correct response if necessary.

e.g., The child makes a slight sound; the teacher turns around and places the child's hand on the bell.

b. If the child makes no response within the 30 second period, prompt the correct initiating response. This can be best accomplished by using a second trainer, since it is impossible for the teacher to completely withhold her attention and prompt the child at the same time.

e.g., The child makes no attempt to signal the teacher's attention. The teacher continues to face away from the child. A second trainer approaches the child and prompts him to ring the bell.

4. After the child produces the initiating response, provide the opportunity for the child to make a request.

e.g., The teacher presents a choice array of a ball and a record. (The child has already been trained to point to request a toy or activity at free play time. The initiating response of ringing a bell is now simply added on).

5. Follow through with the request procedure as trained previously.

   e.g., The teacher waits 20 - 30 seconds. The child makes no response, so the teacher says "What do you want?". The child then points to the record player, and the teacher praises him and turns on his favorite record.

6. Continue the above procedure, gradually moving further and further away from the child, until the child will consistently make the initiation response when the teacher is several feet away.

   e.g., The teacher sets up the free play situation, then walks across the room. The child rings his bell, and the teacher crosses the room, stands near the child, and looks expectantly at him.

Criterion

If the child correctly initiates the request, in the training setting (e.g., free play) on approximately 80% of the training trials for 3 out of 5 days, proceed to Generalization Training below.

Generalization

Once the child can consistently initiate a request in the selected training setting, the initiation response should be generalized in the following ways:

A. Generalize the response to other high-preference items, and other situations.

   e.g., The child must ring the bell to initiate a choice of drink at lunch time.

B. Generalize the response to other trainers.

e.g., The mother is told not to provide a snack choice at home until the child rings the bell to get her attention.

When the initiating response has been generalized beyond the initial training setting, proceed to ENVIRONMENTAL MANIPULATIONS TO FACILITATE SPONTANEOUS USE.

ENVIRONMENTAL MANIPULATIONS

ENVIRONMENTAL MANIPULATIONS TO FACILITATE SPONTANEOUS USE

GOAL:	Given situations in the natural environment where it is appropriate and/or necessary that the child communicate in order to fulfill some want or need, the child will a) recognize the need to communicate, b) initiate a communication interaction by signaling for attention, and c) use a requesting behavior to ask for the desired or needed item.
RATIONALE:	With the severely multiply handicapped child, the teacher often has the task of creating the need for the child to communicate. In many cases the student has had a history of communication failure or has learned that most of his physical needs will be met non-contingently. Even students who have been required to request their wants and needs using the CCC Program objectives may remain largely noncommunicative and dependent upon the request training situations as a signal for communication.

Description

In this objective certain features of the child's daily environment are changed in a way which creates a communicative need. As with all previous training, this objective centers around the child's requesting (reinforcing) items and activities. The procedures in the next section describe such manipulations as prohibiting access to a desired item, delaying an expected and enjoyed activity, or removing an item necessary to the child's participation in desired or required activities. Using the teaching procedure described throughout earlier objectives of this manual, the child is trained to a) recognize a communicative need whenever it arises; b) initiate the communicative interaction, and c) request the needed or desired item/activity.

Procedures

The procedures for ENVIRONMENTAL MANIPULATIONS differ from procedures for INITIATION TRAINING and REQUEST TRAINING in that, for most children, those responses were necessarily trained in highly structured setting, using repeated trials. Environmental Manipulation "trials" however, occur singly and intermittently. The brief teaching sequence which accompanies the Environmental Manipulation is incorporated into the ongoing classroom activity. The child is not placed in a highly structured or isolated training setting. Rather, the teacher now intervenes briefly and intermittently in the ongoing events of the natural environment, thus facilitating the spontaneous use throughout the day of specific requesting and initiating behaviors trained earlier. Specific procedures and training steps for ENVIRONMENTAL MANIPULATIONS are discussed below:

A. Select a situation to be manipulated in order to create a communicative need and develop the child's recognition of that need. There are a variety of ways in which the child's environment can be manipulated. The following describes some of those ways:

1. Delay an anticipated and enjoyed activity.

In order for this manipulation to be effective, there must be clear cues which "announce" or accompany the activity. For example, going to the lunch room may always be preceeded by lining up near the door; snack time is always accompanied by all the class sitting around the snack table; and so-on.

e.g., Johnny's daily classroom schedule includes time outdoors at 3:00 each day. Just before 3:00 the children finish their snack, put their coats on, and go outside for 15 minutes. Johnny especially enjoys and looks forward to this activity. As an environmental manipulation designed to facilitate Johnny's spontaneous communication, one day the teacher changed the routine: After snack at 3:00 the children were not taken outside. The teacher buried herself at her desk, and did not attend to Johnny, waiting for him to recognize the change in routine and to initiate communication.

2. Prohibit access to desired items or activities which other children have access to.

In this type of manipulation an expectation of a routine activity is not necessary. The communication need is created by setting up an obviously "unfair" situation in which the child's classmates are given a high-preference item or activity, which is withheld from the child being trained, until he or she makes a communicative response.

e.g., Sandy's favorite food was chocolate ice cream. As part of a special snack in the classroom, all the children were given chocolate ice cream. The teacher, without commenting, "forgets" to give Sandy her ice cream. She then sits down to feed another child, waiting for Sandy to recognize the communicative need and initiate an interaction.

3. Remove items which are necessary to the child's participation in certain activities.

There are many items which, while not intrinsically reinforcing in themselves, are necessary to accomplish a desired activity. (For example, the child's spoon may not itself be a high-preference item, but removing it from the tray of a child who loves to eat lunch definitely creates a communicative need)

e.g., Kenny enjoys coloring as a free time activity. He is seated at a table and paper is placed in front of him, but the crayons are left on the shelf. The teacher says, "You can color now Kenny" and walks to the other side of the room. She waits (without looking at him) for Kenny to recognize the need to initiate a request for the crayons in order to participate in the activity of coloring.

b. Identify the targetted responses to be used to initiate (i.e., signal for the teacher's attention) and communicate a request. In most cases these will be behaviors which the child has learned in the previous objectives, REQUEST TRAINING, and INITIATION.

e.g., Johnny, mentioned above, will be required to say "uh" to get the teacher's attention. The teacher then will provide access to his communication board, if it is not already nearby, and he will point

to the picture representing "outside". Johnny had been trained to produce both of these responses in earlier, more structured objectives of Requesting Through Choice, and Initiating Communication.

C. Training Steps.

1. Manipulate the environment to create a communicative need (as described in A1, 2, or 3). The particular situation selected for training should be manipulated only intermittently. As stated above, one of the goals of this objective is to teach the child to recognize a communicative situation. If, for example, a spoon is missing from the child's lunch tray every day, it would eliminate the novelty of "unexpectedness" feature which serves as an important communicative cue.

e.g., One of Fred's favorite activities is mealtime. In order to create a communicative need, lunch trays are passed to everyone except Fred.

2. Continue normal classroom activities for one to two minutes (not attending to the child).

e.g., The teacher busies herself by helping the other children eat.

a. If the child does not signal for the teachers' attention, he is prompted to do so. Continue to b below.

e.g., Another adult in the classroom says "Ring your bell, Fred".

b. If the child signals for the teacher's attention, the teacher approaches the child, looks expectantly, and waits 20 - 30 seconds for the child to make a request.

e.g., Fred rings the bell attached to his wheelchair. The teacher looks up at Fred and waits.

1) If the child makes an acceptable requesting response, the teacher provides the desired item or activity.

e.g., Fred points to the place where his spoon should be, then points to another child's spoon. The teacher says "Oh, you don't have a spoon! Here you are", and promptly gives him a spoon.

2) If the child makes an incorrect response, the teacher prompts the correct response and complies with the request.

e.g., Fred starts to holler and wave his arms. The teacher models the pointing response, and Fred imitates. The teacher then provides the spoon.

3. If the child makes no response at all, the teacher must use his or her own judgment in deciding whether to prompt the response, continue waiting for a response, or eliminate (for the time being) the opportunity for access to the desired item or activity. This will depend upon how well the child knows the request response, and how necessary it is that the child receive the missing item or activity. For example, in most classrooms, a child's lunch cannot be withheld indefinitely. On the other hand, if a child had demonstrated on other occasions that he knows the correct response, it might be appropriate to withhold a cookie at snack time. As mentioned in earlier sections, it is important for children to learn that if they do not ask, the item or activity cannot be received. Also, children must retain the right to not want something, even though it is usually a high-preference item or activity.

CCC

ENVIRONMENTAL MANIPULATION PLANNING SHEET #2

To Facilitate Spontaneous Use

Student JOHN

Existing Situation (Describe anticipated activity and critical cues)
EACH DAY AFTER LUNCH JOHN GETS TO GET OUT OF HIS WHEELCHAIR AND LIE ON THE MAT. HE IS WHEELED BACK TO THE CLASSROOM AFTER LUNCH AND WITHIN 5 MINUTES HE IS PLACED ON THE MAT.

Manipulation (Teacher behavior producing a "need to communicate")
TEACHER "FORGETS" TO TAKE JOHN OUT OF WHEELCHAIR. SHE BEGINS WORKING WITH ANOTHER CHILD IN THE CLASS, AND IGNORES JOHN, WAITING FOR HIM TO SIGNAL HIS ATTENTION.

Date	Initiation Response	Consequence (Teacher's Response)	Requesting Response	Consequence (Teacher's Response)
4/25	JOHN BEGINS TO VOCALIZE	TEACHER APPROACHES HIM AND WAITS 20 SECONDS THEN SAYS, "WHAT DO YOU WANT?"	JOHN TURNS HIS HEAD AND STARES AT MAT.	TEACHER SAYS, "OH YOU WANT TO LIE ON THE MAT." AND TAKES HIM OUT OF THE WHEELCHAIR AND PLACES HIM ON THE MAT.

Figure 12: Environmental Manipulation Planning Sheet #2

Criterion

Because environmental manipulations are incorporated into the daily events of the classroom in a somewhat random way, it is difficult to set a specified number of trials or an acquisition criterion. A useful data collection procedure might be to simply record, over a given time period (e.g., two weeks) the percentage of environmental manipulations which did, in fact, produce appropriate communicative behavior. The setting of a "performance criterion", however, implies that the behavior need no longer be trained. While formal training of a particular response may have been completed, teachers and parents must continue to facilitate, expect, and encourage spontaneous use of communication throughout the day.

Generalization

For children who utilize a choice response where the requesting behavior is the same regardless of the item or activity being requested (e.g., pointing or eye gaze), a number of <u>different</u> communication situations can be created.

> *e.g., On a particular day, three of Fred's favorite activities were manipulated: his spoon was removed from his lunch tray; the teacher "forgot" his juice cup at snack; and the toothpaste was missing at toothbrushing time. The required response (pointing) was always the same.*

On the other hand, if a child uses a more specific response (e.g., speech, signing, or board symbol), then it <u>may</u> be desirable to manipulate only on a particular situation until the child is using that particular response consistently before going on to other manipulations.

> *e.g., Jonathon was a signer. His spoon was removed from his tray on intermittent occasions until he consistently produced the correct sign for "spoon". Then his cup was removed occasionally at snack time until he consistently produced the sign for "cup" and so-on.*

APPENDICES

APPENDIX A

FACILITATOR TRAINING

"Facilitators" is a term used by the CCC Program to refer to additional training done to enhance the development of that student's specific communication response(s). The central focus of CCC Programming is the development of ways to request wants and needs and to obtain attention from the Caregiver. Facilitators are those behaviors such as attending, motor imitation, vocal imitation, vocabulary training, specific training in motor movements, etc., that can be trained outside of the actual communication training setting and serve to aid in the development of the student's specific communication response(s).

By doing facilitator training, the teacher can often help speed the student's acquisition of a communication response. Although the curriculum stresses functional training within the natural environment, faciliatators are often best taught in more conventional, structured settings. Facilitator training does not teach communication, per se. Rather, it teaches behaviors which can be used to develop communication responses.

TYPES OF FACILITATORS

The CCC Program does not provide specific training procedures for facilitator training. There are a number of programs available from other sources which suggest procedures for training. The following presents brief guidelines for the use of facilitators with the CCC objectives.

Development of Training in Augmentative Communication Systems. For many severely handicapped students development of a non-speech communication mode (i.e., communication boards and manual signing systems) is often a necessary long range goal. Although the students will learn to obtain desired items or needed help from others through the training objectives outlined by the CCC Program, development of non-speech communication systems and specific response training using those systems may need to take place outside of the communication training setting. While the CCC Program has included some guidelines for mode selection and development of communication boards, (see Appendix D and E) teachers using the curriculum are also encouraged to seek outside consultation from support disciplines like Occupational Therapy, Speech and Hearing, and Physical Therapy in an effort to develop non-speech communication systems.

Training to Facilitate Response Development: Any response selected for training as a communication response may also require direct training in a facilitator training setting. Acquisition of difficult motor responses can often be facilitated by additional training in a mass trial one-to-one training setting. For example, a discriminative head turn to the right or left might be selected as the only possible response a child can use for the

"Choice" objective. If the child is severely impaired it may be necessary to do more intense direct training to get this response to occur at a consistent and reliable rate.

Again it may be advisable to seek the help of support personnel when selecting or training motor movements for a student's communication response. Severely handicapped students frequently have abnormal motor systems that require complicated and careful assessment to teach even the simplest movement response. Often, requiring one type of motor response will interfere with correct patterns of movement in other parts of the body and possibly result in some undesirable motor behaviors for the student.

Facilitators That Can be Used as Prompts

Facilitators That Can be Used as Prompts. The greatest use of Facilitator training will probably be to develop specific prompts which can be used to evoke the desired response quickly and efficiently.

1. Vocal Imitation. Probably one of the most frequently trained "language" skills is vocal imitation. Several programs have been developed which teach this behavior. Vocal imitation is absolutely essential for the training of speech. Because speech cannot be physically prompted, the trainer is dependent upon the student's imitation of vocal models as the only prompting device. Vocal imitation may, also, be facilitative in some instances where speech is not the primary mode. For example, just teaching a student to vocalize in response to the teacher's vocalization, whether or not the same sound is produced (i.e., "contingent vocalization") can be helpful and as a prompt in teaching a student to signal for attention.

2. Motor Imitation. Motor imitation can be used as a prompting device for both gross (e.g., pointing) and fine (e.g., signs and finger spelling) motor responses. It is important as a prompting device for virtually all nonspeech responses. It is particularly important in cases where manula sign is the primary form mode.

3. Following Simple Commands. Many children can be taught to follow simple commands, for example, "Point to (an object)", "Shake your head", "Clap your hands", etc. Such commands are often useful as prompts and are sometimes more efficient than motor imitation prompts. This would particularly be the case when gross movements (e.g., head turning) rather than fine motor movements (e.g., manual signing) are selected for communicative response training. In addition, commands (such as "sit down", "look at me", etc.) can also be used to control interfering behavior, and develop attending.

4. Match-to-Sample. Matching-to-sample is another task which has frequently been included in traditional language training programs. Its greatest advantage as a facilitator is probably to those students whose primary mode is a communication board.

Facilitators That Generally Enhance Learning

Certain behaviors can be trained which will facilitate all learning. Generally, these are behaviors which in some way improve students' ability to attend to relevant stimuli.

1. Eliminating Interfering Behaviors. This training does not develop a behavior which directly enhances communication. Rather, it attempts to decrease a behavior, or set of behaviors, which interfere with learning. Interfering behaviors must be brought under instructional control, or diminished, before communication training can take place. Such behaviors as self-stimulatory behaviors, and tantrums fall into this category, as well as certain appropriate behaviors which occur at inappropriate times.

   Training to eliminate interfering behaviors may need to begin before communication training begins. It is sometimes the case, however, that the training of a new response which is incompatible with the interfering behavior will automatically decrease the rate of the undesirable behavior.

2. Attending Behaviors. It is impossible to overemphasize the importance of attention in any kind of learning. The ability to focus one's attention upon relevant stimuli, and to inhibit responding to background stimuli is crucial to the success of any training. Attending behaviors include such behaviors as making eye contact when spoken to, directed eye gaze (looking at objects or looking in the direction indicated by someone else) and maintaining attention for a period of time sufficient to allow processing. It should be obvious that attention training is a facilitator that is appropriate for all phases of the CCC Program.

The following are some examples of facilitator training programs that were designed to facilitate response development.

Example #1

Charlie was a spastic quadraplegic child who had no use of his hands and minimal head control. He inconsistently vocalized a one syllable sound /eh/. The classroom teacher noticed that the sound seemed to occur whenever Charlie was content. The teacher discovered that if Charlie was given some physical contact like patting or tickling he could be stimulated to a point where the /eh/ vocalization became imitative. Because Charlie was so limited in his potential response repertoire the teacher decided to develop this sound for Charlie's "more" response. The facilitator training consisted of carefully structured training sessions designed to gain imitative control over Charlie's limited vocalization. This activity over a two week period greatly increased Charlie's vocal responsiveness. The /eh/ vocalization was now under imitative control and could be used as a 'more response'. Whenever Charlie did not respond at the presentation of his favorite activity, being

rocked in the rocking chair, his teacher could prompt it by saying "Charlie, say /eh, eh, eh/. Charlie frequently would imitate the response and thus obtain more rocking. Facilitator training in this example helped Charlie's teacher develop specific prompts which could be used to evoke the desired /eh/ vocalization in a functional communication situation.

Example #2

Gina had learned to make a choice between preferred snacks after school and preferred toys in a free play session at school. Her response was a full hand point to a polaroid picture of those desired items. The pictures were displayed in pairs on a tap board and were presented in the appropriate request training situations. The long range goal was to teach Gina to request all her wants and needs by pointing to simple lined pictures placed on a communication board. In order to help Gina achieve success when the pictures were transferred onto a lap-tray picture communication board, the teacher decided to consult with the Speech Pathologist for some direction in program planning. The Speech Pathologist designed a daily facilitator training program that involved two phases.

1. First Gina learned to point to any of the 6 polaroid pictures when they were grouped together on a 12 by 12 lap tray. The therapist simply required a pointing response to the cue "Gina show me item. Prompting and shaping were done when necessary. Gina was trained in this manner until she consistently pointed to all 6 pictures on the lap tray.

2. Phase II involved systematically replacing the polaroid photos with line drawings. The training procedures used in Phase I were employed and Gina reached criterion within one month.

Once all 6 line drawings were pointed to consistently in the facilitator training sessions, the teacher started brining the board into the request training situations. Facilitator training in this example aided Gina's teacher in utilizing a non-speech communication mode for appropriate requesting of wants and needs in functional situations within the classroom and home.

Example #3

Sandy was profoundly hearing impaired and restricted to a wheelchair. She was unable to make any audible vocalizations. Sandy had learned to point to preferred objects when presented in a two choice array by her teacher and mother. Her teacher decided to teach an initiation response of ringing a buzzer. Because this phase of training was proceeding slowly, the teacher initiated a facilitator training session designed specifically to teach Sandy to push the button on the buzzer. Sandy began to enjoy pushing the button and having the teacher playfully appear with each event. After several weeks Sandy was able to push the buzzer when given a signed command. The signal was now ready to be used in the Initiation request training sessions. In this example additional training helped Sandy to learn a specific response that facilitated her communication training.

Example #4

After completing a Caregiver Interview with Patrick's mother, Mr. Smith was convinced that several foods could be used as high-preference reinforcers in Requesting Through Choice. Patrick's specific motor impairments characterized by spastic and athetoid movements prevented him from making any responses involving his hands or arms. Efforts had been made by the Occupational Therapist in the past to teach Pat to use a head stick to point to food pictures on a 12 by 12 slant board. Mr Smith requested a consultation from the Occupational Therapist. Once the head stick pointing movements were acceptable to the O.T., Pat was introduced to the Requesting Through Communication Board procedures and quickly learned to request favorite foods using his head stick. Here again Patrick learned a difficult motor response in an isolated one-to-one training setting that greatly aided his learning communication behaviors.

APPENDIX B

CCC CAREGIVER INTERVIEW

Child's Name _____ Date _____

Age _____ Information Given By _____

Relationship to Child _____

General Health

What medications does your child receive?	When is it given?	How does it affect your child?
1. _____	1. _____	1. _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____

Does your child have any of these health problems?	YES	NO		How does this affect your child?
Allergies			To what?	
Seizures			How frequently?	
Other chronic problems _____ _____ _____			How frequently?	

What seems to trigger your child's seizures? _____

Physical Condition

Your child chews: Normally With some difficulty With great difficulty

Your child swallows: Normally With some difficulty With great difficulty

Your child sucks: Normally With some difficulty With great difficulty

Describe your child's feeding program or special diets: _____

_____

How would you describe your child's vision? Normal Mild Impairment Moderate Impairment Blind

Does your child wear glasses? YES NO Other comments: _____

How would you describe your child's hearing? Normal Mild Impairment Moderate Impairment Deaf

Does your child wear a hearing aid? YES NO Other comments: _____

How would you describe your child's use of his/her hands?

		Mildly Impaired	Moderately Impaired	Severely Impaired
Control of right hand is:	Normal			
Control of left hand is:	Normal	Mildly Impaired	Moderately Impaired	Severely Impaired

Is your child able to walk independently: YES NO

If NO, describe what assistance is needed: _____

Attending Behavior

How does your child respond to new or unexpected sounds, lights, people, or situations in the environment (e.g., new foods, new room arrangement, bright colored lights)? _____

_____

Approximately how long does your child attend to any one thing he/she is interested in? _____

_____

Interfering Behavior

What behaviors of your child are irritating to you and others around you? _____

_____

What behavior problems does your child exhibit which we should be aware of? _____

_____

_____

How often and in what situations does your child emit these behaviors? _____

_____

What do you do when these problems occur? _____

_____

Reinforcers

Describe your child's typical day.			What about this activity does your child like or dislike?
Event	Approximate Time	With Whom	
Awakens			
Dressing			
Grooming (bath, hair, teeth)			
Breakfast			
Lunch			
Dinner			
School			
Nap			
Play			

Reinforcers
(continued)

	What does your child like and dislike?	Describe what your child does to let you know that he/she likes or doesn't like this.
Activities Likes		
Dislikes		
Objects Likes		
Dislikes		
People Likes		
Dislikes		
Food Likes		
Dislikes		

Which of the above would you consider your child's favorite? _____

List below specific activities, objects, or food which the child routinely experiences, interacts with or receives nearly every day (for example: bath, listening to music, grape juice).

Activities	Objects	Specific Foods

Communicative Function

Does your child communicate any of the below to you?	Frequency: Often	Frequency: Sometimes	Frequency: Rarely or Never	What does the child do to let you know this?	Are there certain times of the day or certain circumstances under which this usually occurs?
Hungry					
Thirsty					
Sick/in pain					
Wet/Soiled					
Happy					
Sad					
Mad					
Tired of or dislikes an activity					
Frustrated					
Other (Specify)					

Does your child let your know he/she wants one of the below?	Frequency: Often	Frequency: Sometimes	Frequency: Rarely or Never	How does your child let you know this?	Are there certain times of the day or certain circumstances under which this usually occurs?
More of something					
Your attention					
Particular object preferred over another					

Does your child ever tell you that he/she is hungry, thirsty, wants your attention, etc. without first being asked?

YES NO How frequently? _____

Communicative Responses

Does your child currently use one of the following to effectively get your attention, specify wants and needs, etc.?

Vocalizations	YES	NO	
Gestures	YES	NO	
Speech	YES	NO	
Manual Signs	YES	NO	If YES, what system? _____
Communication Board	YES	NO	If YES, can the board be taken to school? _____

Has your child had previous training in the following?

Speech	YES	NO	If YES, describe the progress in that training, _____
Manual Signs	YES	NO	
Communication Board	YES	NO	_____

Check ways your child communicates	Frequency: Often	Frequency: Some-times	Frequency: Rarely or Never	What exactly is your child trying to tell you when this occurs? (example: Joe holds out and shakes toys to get Mom's attention.)
Makes facial expressions (smiles, frowns)				
Laughs				
Cries				
Screams				
Tantrums				
Looks at people				
Looks at objects				
Moves body (shakes head, leans forward, etc.)				
Gestures (arm or hand movement)				
Points to or reaches for objects or people				
Imitates other's actions				
Acts out (mimes) communication				
Makes sounds				
Signs single words				
Signs 2-4 word phrases				
Points to pictures or printed symbols				
Says single words				
Says 2-4 word phrases				
Other (describe)				

Communicative Environment

What does your child regularly communicate about (for example: wants attention, is hunbry, etc.)? Describe how this communication occurs. _____

_____

_____

Are there situations during the day when your child is required to make a response before some activity is started or continued (for example: asking for another drink of juice at breakfast, or requesting toys off a shelf)?

YES NO If YES, describe the situation. _____

_____

_____

Are there situations when your child has to make a choice between two or more objects (for example: preferring milk instead of juice, or rocker instead of swing)? YES NO If YES, when? _____

_____

Are there situations during the day when the child must gain your attention in order to get some desired object or meet some need? YES NO If YES, when? _____

_____

_____

Would you be interested in doing any communication training at home? YES NO

CCC TEACHER QUESTIONNAIRE

Student's Name: _____ Date: _____

Completed by: _____

Interfering Behavior

What behaviors of the student are irritating to you and others around your? _____

What behaviors can you see that interfere with learning activities the student is involved in?

How often and in what situations does the student emit these behaviors? _____

Attending Behavior

Does the child attend to unexpected sounds, unfamiliar people, new things in the environment, (e.g., new foods, new room arrangement)? YES NO If YES, how? _____

Approximately how long does the child attend to any one thing he/she is interested in? _____

Reinforcers

List the student's daily schedule from the beginning to end of class*	With Whom	Does the student enjoy the activity? Likes Dislikes	Describe how you know the child likes or dislikes the activity.

* Attach another sheet or turn to page back if more space is needed.

Reinforcers (continued)

	What does the student like and dislike?	Describe what the student does to let you know that he/she likes or doesn't like this.
Activities Likes		
Dislikes		
Objects Likes		
Dislikes		
People Likes		
Dislikes		
Food Likes		
Dislikes		

Which of the above would you consider the student's favorite? _____

List below specific activities, objects, or food which the student routinely experiences, interacts with or receives nearly every day (for example: P.T., listening to music, grape juice).

Activities	Objects	Specific Foods

Communicative Function

Does the student communicate any of the below to you?	Frequency: Often	Frequency: Some-times	Frequency: Rarely or Never	What does the child do to let you know this?	Are there certain times of the day or certain circumstances uncer which this usually occurs?
Hungry					
Thirsty					
Sick/in pain					
Wet/Soiled					
Happy					
Sad					
Mad					
Tired of or dislikes an activity					
Frustrated					
Other (Specify)					

Does this student let you know he/she wants one of the below?	Frequency: Often	Frequency: Some-times	Frequency: Rarely or Never	How does the student let you know this?	Are there certain times of the day or certain circumstances under which this usually occurs?
More of something					
Your attention					
A particular object preferred over another					

Does the student ever tell you that he/she is hungry, thirsty, wants your attention, etc., without first being asked?
YES NO How frequently?

Communicative Responses

Does the student currently use one of the following to effectively get your attention, specify wants and needs, etc.?

Vocalizations	YES	NO	
Gestures	YES	NO	
Speech	YES	NO	
Manual Signs	YES	NO	If YES, what system? _____
Communication Board	YES	NO	If YES, can the board be taken to school? _____

Has he/she had previous training in the following?

Speech	YES	NO	If YES, describe the progress in that training. _____
Manual Signs	YES	NO	
Communication Board	YES	NO	_____

Check ways the student communicates	Frequency: Often	Frequency: Sometimes	Frequency: Rarely or Never	What exactly is he/she trying to tell you when this occurs? (example: Joe holds out and shakes toys to get attention.)
Makes facial expressions (smiles, frown)				
Laughs				
Cries				
Screams				
Tantrum				
Looks at people				
Looks at objects				
Moves body (shakes head, leans forward, etc.)				
Points to or reaches for objects or people				
Imitates other's actions				
Acts out (mimes)				
Makes sounds				
Signs single words				
Signs 2-4 word phrases				
Points to pictures or printed symbols				
Says single words				
Says 2-4 word phrases				
Other (describe)				

Communicative Environment

What does the student regularly communicate about (for example: wants attention, is hungry, etc.)? Describe how this communication occurs: _____

_____

_____

Are there situations during the day when the student is required to make a response before some activity is started or continued (for example: asking for another drink of juice at snack, or requesting toys off a shelf)? YES NO If YES, describe the situation: _____

_____

_____

Are there situations when your child has to make a choice between two or more objects (for example: preferring milk instead of juice, or wagon instead of swing)? YES NO If YES, when? _____

_____

_____

Are there situations during the day when the child must gain your attention in order to get some desired object or meet some need? YES NO If YES, when? _____

_____

When during class might it be possible to build in communicative situations for the following purposes?

Identifying additional reinforcers: _____

_____

Requesting "More": _____

_____

Making Choices: _____

_____

Initiating an Interaction: _____

_____

APPENDIX C

CCC

RESPONSE AND REINFORCER SUMMARY SHEET

Student_____

Situation	Reinforcers	Communicative Responses	Potential Communicative Responses

CCC

REINFORCER SAMPLING DATA SHEET

Student_____

Date	Item/Activity	Response to Introduction	Response to Termination

CCC

DAILY ACTIVITIES SUMMARY SHEET

Student _____

Event	Approx. Time	With Whom	Student Likes/Dislikes	How Do You Know Student Likes/Dislikes Activity?

CCC

ENVIRONMENTAL MANIPULATION PLANNING SHEET #1

To Identify Potential Reinforcers

Student_____

Manipulation Probe-Situation #1

Existing Situation (Describe anticipated activity and critical cues)

Manipulation (Teacher behavior producing a 'need to communicate")

Responses

Date	Responses

Manipulation Probe-Situation #2

Existing Situation (Describe anticipated activity and critical cues)

Manipulation (Teacher behavior producing a "need to communicate")

Responses

Date	Responses

CCC

ENVIRONMENTAL MANIPULATION PLANNING SHEET #2

To Facilitate Spontaneous Use

Student_____

Existing Situation (Describe anticipated activity and critical cues)

Manipulation (Teacher behavior producing a "need to communicate")

Date	Initiation Response	Consequence (Teacher's Response	Requesting Response	Consequence (Teacher's Response)

GENERALIZATION PLANNING SHEET

Student_____

Original Training:

Response (include prompts used):_____

_____

Reinforcer:_____

Trainer:_____

Setting:_____

Proposed Generalization Situations:

Situation	Person	Setting (place)	Reinforcer
1.			
2.			
3.			
4.			
5.			
6.			
7.			

APPENDIX D

COMMUNICATION BOARDS

The purpose of this appendix is to provide general guidelines for planning and managing a communication board for a severely multiply handicapped student. The information in this appendix is not relevant unless or until a child exhibits communicative skills at least through the "Requesting Through Choice" objective of the curriculum. Additionally, the decision to use a board as opposed to signing or sppech with this student should have already been made, following the guidelines in the previous appendix, "Selecting a Primary Communication Mode".

This appendix includes three sections. The first section should assist teachers in planning a communication board. The second addresses classroom management of the boards, and the third gives an example of a facilitator program which expands board vocabulary. The information presented in these sections are intended only as guidelines and are not exhaustive. References are cited throughout the appendix which provide more specific information. Additionally, information and feedback should be obtained from the parents, speech pathologist and occupational therapist whenever possible.

Nietupski and Hamre-Nietupski (1979)[1] define a communication board, or a communication aid, as a display device containing objects, pictures, symbols, or printed words. These aids range in sophistication from simple pictures on poster board to involved electronic appliances. The information presented in this appendix refers primarily to the planning and use of unaided or non-electronic boards. Most electronic communication devices were developed for persons with fairly good language and cognitive skills. They also are expensive and prone to broken parts. Therefore, the majority of these aids are simply not appropriate for severely or profoundly retarded individuals.

Generally, electronic boards require skills in localizing and tracking visual stimuli, matching and arranging sequences of lights or word order, and categorizing letters, numbers, colors, or other labels. Many of these skills involve fairly good memory. It is strongly recommended that a device not be selected unless during assessment your student is able to exhibit most of the cognitive (memory, scanning, matching, sequencing) and motor (switch or signal activating response) skills necessary to operate the device. If this is not the case, so much time will likely be spent in teaching the mechanics and logistics of the device that there is no time for communication training.

There are however, severely multiply handicapped students for whom electronic boards may be appropriate. Generally, these are the students who exhibit severe motor handicaps but good cognitive skills. These students also are actively involved with and motivated by their environment.

It is not within the scope of this appendix to discuss electronic boards. Two sources which should assist you further are listed at the end of the appendix.

[1] Nietupski, J., and Hamre-Nietupski, S. Teaching auxiliary communication skills to severely handicapped students. AAESPH Review, 1979, 4 (2), 107-124.

SYSTEM PLANNING

One of the primary assessment goals for a board candidate involves matching the student's motor and language skills, and the environmental restraints to a particular board system. For most students this is no easy task. There are at least six major areas of concern which must be addressed during this planning phase.

1. What motor or visual response will the student use to select the elements of the message on the board?

2. How will the board be displayed so that the student can use the response to indicate the message?

3. What symbol system will the student use?

4. What vocabulary will be taught?

5. In what order will the vocabulary symbols be placed on the board?

6. How will the board be made?

The final few pages of this section of the appendix are a worksheet which may be copied and completed for each student for whom you are planning a board. Your speech pathologist and occupational therapist should be able to assist you with this planning. The planning sheet takes a step-by-step approach through the decisions. The remaining pages list guidelines which should help you make these decisions.

Decision I: Response

This decision involves viewing the student's physical handicaps and abilities in order to identify an effective way for him/her to indicate the elements (symbols) of the messages. The planning sheet lists several alternatives. It is recommended that all extremities, trunk, and eye movements be analyzed to conclude which has the most potential as a selection response. Table 1 lists and defines the variables which must be balanced in identifying the response. Analyze all available responses according to those variables, then decide which response is the most appropriate.

Many students' responses may be facilitated by position, angle, or elevation changes. By changing these variables and thus realigning the arm or hand, the student is often able to exhibit more purposeful pointing. Some

Table 1: Variables which must be balanced to determine an appropriate selection response for a physically handicapped student.

Variable	Definition	Rationale
Consistency	Degree to which motor skills remain constant from trial to trial or from day to day.	The movement will be more intelligible if it does not change from response to response.
Stability	Capability of maintaining the completed response for a few seconds.	The more stable the movement the more time an observer has to attend to and understand the message.
Range	Amount or distance of movement possible.	The greater the range of the response the more potential exists for an expanded vocabulary and the less likelihood of needing a coded board. (NOTE: Range must be balanced closely with control as both strength and control decrease toward toward the extremes of the range.)
Control	Degree of fine (or small) movement possible as opposed to gross movement.	The finer the control of the response (such as pointing), the smaller the symbol cards can be.
Speed	Rate with which the response can be completed.	The quicker the response, the more likely a listener is to attend to the message.
Fatigue	Amount of energy and concentration required to complete the response.	The less fatiguing the response, the more useful the board will be throughout the day. A fatiguing response results in progressively poorer performance as the board's use increases.
Imitation	Accuracy with which the student's response can match an imitative model.	A response which is already under imitative control will probably require less training time.

may need help in arresting jerky or continuous motions. For these students, providing handles to grasp or grooves or slots to rest their arm in may give the control they need. Weighted wrist cuffs or saddle bags may also help. The more controlled the student's movements, the more response choices the student can be given on his board or panel.

If the student is able to use only one very restricted movement or signal such as an eye blink or finger tap there are still possibilities for a board system. These students may be candidates for a scanning board. Vanderheiden and Grilly (1975) explain a scanning system in this way.

> ". . . a technique is considered to be a scanning technique if the items in the child's vocabulary are presented to him one at a time so that he can let you know when the item he wants is presented. . . (An) example of a simple scanning technique would be the use of a communication board with a second person pointing to the pictures, words, or letters one at a time while watching for a response from the child. . . . . If you can recognize a child's affirmative signal of any form, you can use any of the non-mechanical techniques, no matter how severe the child's physical handicaps." (pages 21 and 22).

One prerequisite cognitive skill for the use of a scanning board is the affirmation function of "yes". If the student does not exhibit this function of "yes" a scanning board will not work.

Additional information about responses for severely physically handicapped students may be found in the Barnes, Murphy, Waldo and Sailor chapter listed in the reference section of this appendix. This chapter provides specific information on positioning and fine motor movements as well as movements for board responses.

Decision II: Board Display

There are as many possible board displays as there are students. These displays can be very simple or very complex depending on the response selected for the student and his/her cognitive skills. Figure 1 shows a few displays that may be appropriate for a severely multiply handicapped student. Usually some combination of one or two of these displays is used in order to meet the skill level of a particular physically handicapped student.

Three examples of Direct Selection boards which require a pointing response are shown. The student may point to the symbols on the board with whatever response they use, i.e., pointing with a hand, foot, or stylus. The Sample 1 board is an initial board used by a student in the Requesting Through Board objective. The Sample 2 and 3 boards were used by two students who had expanded vocabularies. There are no "rules" about where on a direct selection board the symbol cards are placed.

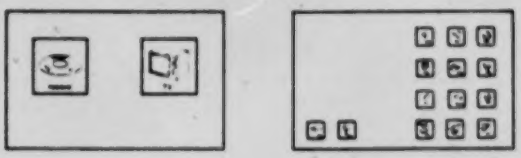
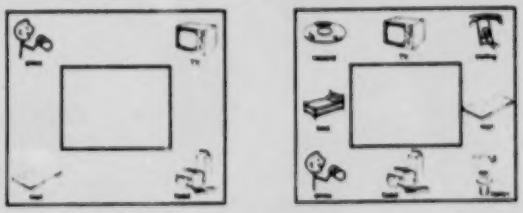
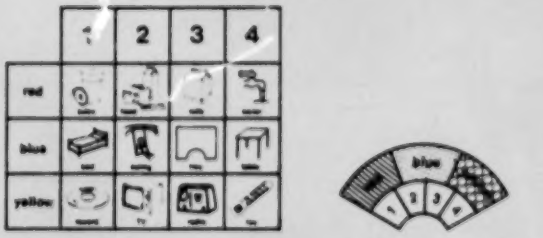
Student points in some way directly to the symbols.	DIRECT SELECTION (Pointing)  Sample 1 Sample 2 Sample 3
Student looks at the desired symbol which is placed on a "donut" of plexiglass, standing or attached vertically to a lap tray.	DIRECT SELECTION (Eye gaze)  Sample 4 Sample 5
Student points to or looks at colors and/or numbers on a response panel to tell the observer which symbol to attend to on the board. If the student pointed to "blue" and then "2" on the response panel, he is trying to communicate that he wants the swing.	ROW COLUMN  Board Response Panel Sample 6
Student points twice to areas on the response panel to indicate which of the 16 symbols is desired. The first point to the panel tells which of the 4 main qudrants has the symbol. The second point tells which symbol within that quadrant is needed. If the student pointed to the upper right and then the lower left of the panel, he wants dessert.	SUCCESSIVE QUARTERING Board Response Panel Sample 7

Figure 1: Sample Board Displays.

Two example Direct Selection eye gaze boards are shown. Notice that the Sample 5 board has a total of eight symbols displayed. This number and their placement are the maximum recommended for this type of board. With up to eight symbols on the plexiglass, the looking, or eye gaze response can be very reliable.

Because the Row/Column and Successive Quartering boards are so complicated to explain only one example of each is provided. However, the particular coding system used with either of these boards may be individualized and therefore different for each student. Generally, however, both of these types of coded boards require memory, sequencing, and matching skills beyond those required for a Direct Selection Board.

For a more detailed discussion of board displays read the Vanderheiden and Grilly reference cited.

Decision III: Symbol Selection

Figure 2 gives a comparative example of the abstractness of the different symbol systems which may be used on a board.

To determine which may be most appropriate for your student, assess matching skills. Probe to see how well the student can match identical drawings. Probe also to see if the student can match the object itself to the symbol (i.e., photograph, drawing, Rebus, etc.). If the student is unable to match in any of these tasks, use the simplest symbols possible to begin training, usually line drawings.

The following guidelines are presented to aid in the symbol selection decision once the probes are completed.

Peabody Rebus or original line drawings are suggested as the most appropriate symbols for most severely handicapped students. These systems are very easy to reproduce and can be standardized from student to student. Additionally, as the student's vocabulary increases, these may be easily reduced in size to accommodate new symbols on the board.

NOTE: Phase II of the Communication Board Objective can be used to initially train a student to use the small line drawings.

Combining more than one symbol system is encouraged. Do whatever can be done to facilitate the most functional and largest vocabulary possible.

Avoid color in the photographed or drawn symbols. First, this added cue may interfere with generalization. For example, if the symbol for coat is colored to exactly match the student's coat, the response may not generalize to a new coat. Also, coloring the symbols is quite time consuming and may inhibit replacing damaged or lost boards or sending boards home.

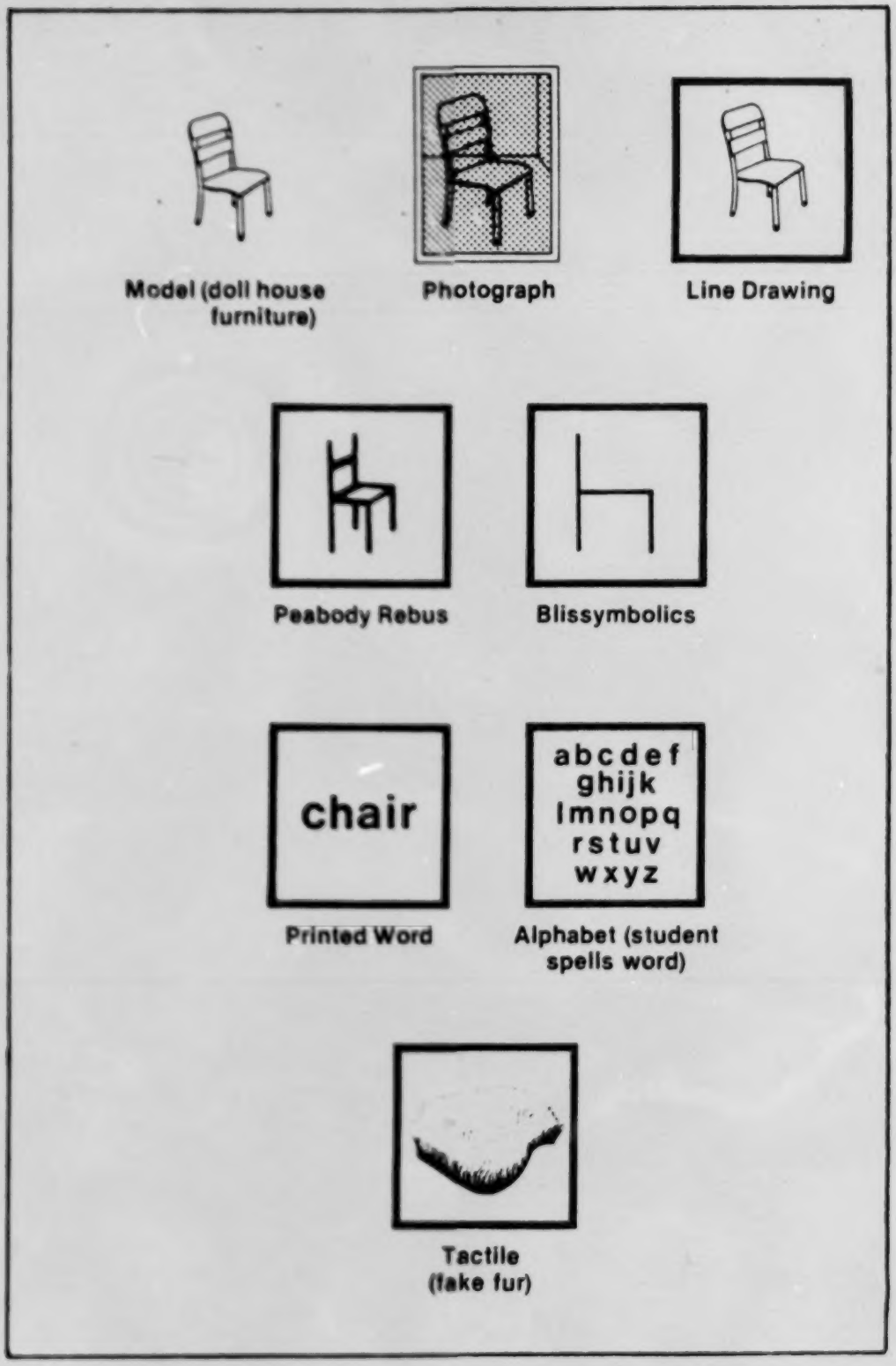


Figure 2: "Chair" symbolized with several systems available for communication boards.

Always type or write the written word for the symbol plainly on the card. This allows a "listener" unfamiliar with the symbols an opportunity to understand the message.

Sources which provide glossaries of Peabody Rebus and Blissymbolic Symbols are listed in the Reference section.

Decision IV: Vocabulary Selection

Select a core vocabulary of the most motivating (reinforcing) words which have already been used in "MORE" or "CHOICE" objectives of the curriculum or which may likely be used in future training. Select those symbols which are motivating and which will actually be used in functional communication. Once a core vocabulary of reinforcing words have been selected, a few "need" words may also be selected for training. These may include such words as toilet or coat. However, these "need" words should be taught only after the student can functionally use the "want" words. Refer to the planning sheet for further assistance with this decision.

Decision V: Vocabulary Display

This decision in the planning process coordinates all of the planning completed to this point. In view of the student's selection response, board display and vocabulary, the decision is now made about where to specifically attach each symbol to the board. The planning sheet provides space to make a record of these decisions. It is recommended that this sheet be kept on record in the event the board is lost or ruined.

Decision VI: Board Construction

In planning the construction of the board, the two primary goals are portability and durability. A portable board can be carried or otherwise kept with the student throughout the day. A durable board can withstand the abuse that often accompanies being transported. Suggestions for making the boards portable follow:

Use the lightest weight materials possible. That is, use posterboard, not cardboard or plywood.

Use the smallest symbol cards that the student's visual, motor, and cognitive skills will allow. This will enable the entire board to be compact.

If the student has a wheelchair, attach the board to the lap tray.

If the student is ambulatory, put shoulder straps on the board so it may be easily carried.

If the board is carried, have it fold in the middle to make it smaller. A laminated file folder works well for this.

Make the most simply constructed board possible for two reasons. The simpler the board, the easier it will be to carry. Probably more importantly, the easier it is to make the board, the easier it will be to quickly replace it with an identical board. Boards carried routinely are often lost or damaged. Quick replacement is extremely important.

Table 2

CCC

COMMUNICATION BOARD PLANNING SHEET

System Selection

Student _____

Decision I: Response

Check how this student will select the elements of the message.

- ☐ Hand or finger pointing
  - ☐ Right hand
  - ☐ Left hand
- ☐ Pointing with hand stylus
  - ☐ Right hand
  - ☐ Left hand
- ☐ Head turn
- ☐ Pointing with head stylus
- ☐ Eye gaze
- ☐ Foot pointing
  - ☐ Right foot
  - ☐ Left foot
- ☐ Combination (specify) _____
- ☐ Other (specify) _____

Decision II: Board Display

- ☐ Direct Selection
- ☐ Row/Column
  - ☐ Color Code
  - ☐ Number Code
  - ☐ Color/Number Code
  - ☐ Other Code (specify) _____
- ☐ Successive Quartering
- ☐ Combination (specify) _____
- ☐ Other (specify) _____

Decision III: Symbol System

The student will use the following system(s) for the symbols on the board. (Check all that apply):

- ☐ Actual items or models of actual items.
- ☐ Photographs
- ☐ Line Drawings
- ☐ Peabody Rebus
- ☐ Blissymbolics
- ☐ Tactile/Textural Stimuli
- ☐ Printed words
- ☐ Alphabet

Decision IV: Vocabulary Selection

What reinforcers were most motivating during "More" and "Choice" training?

_____

That is, what is most important to the student to communicate?_____

_____

What is most important to the parents for the student to communicate?____

_____

What is most important at school for the student to communicate?_____

_____

Select from the above a core vocabulary of the most motivating and/or needed vocabulary with which to begin training. Select only as many as you feel your student can learn in the next year. The highest priority items are those which the student can use to communicate his immediate wants and needs.

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

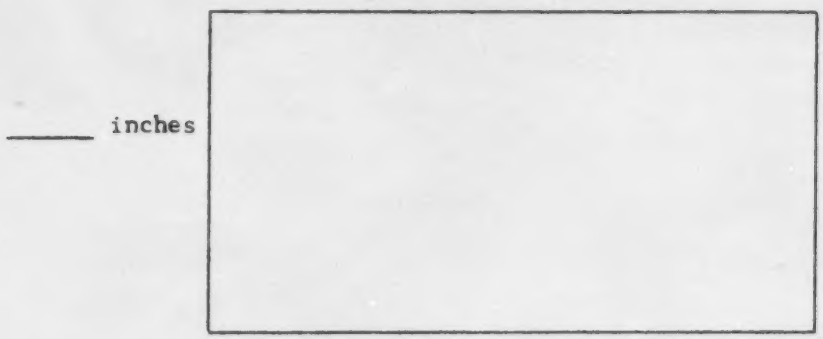
Decision V: Vocabulary Display

What size will the board be? _____ inches by _____ inches

If the board is a direct selection display, what is the smallest size vocabulary card this student can indicate and see?

_____ inch

In the sample board below, draw in how you would like the student's board display to be after one year's training (use additional pages if necessary). Write in the word for each symbol card. If a response panel is used, draw a sample panel beside the board display sample.



If a flip-up display is used, draw sample displays in additional space.

Decision VI: Board Construction

List the materials needed to make the board:

1. _____ 5. _____
2. _____ 6. _____
3. _____ 7. _____
4. _____ 8. _____

FILE THIS FORM IN A CENTRAL LOCATION. IF THE BOARD IS LOST OR DAMAGED, USE THIS PAGE TO HELP RECONSTRUCT AN IDENTICAL BOARD.

Example Communication Board System

Decision I: Response - Right Hand Pointing Combined with Eye Gaze

Decision Rationale:

L. exhibited severe mixed quadriplegia. Head and foot movement were restricted because of positioning padding and straps on the wheelchair. Eye gaze was under directional control. Within a certain range, gross control of the right hand was fairly consistent, and stable. L. could imitate gross hand placements. Speed was variable. Hand pointing took a fair degree of concentration. A combination response was selected to allow for a larger vocabulary.

Decision II: Board Display - Combination Direct Selection and Number Code.

Figure 3 shows two views of L.'s board display. There is a board divided into 4 colors, (red, blue, yellow, and green) laminated onto the lap tray. A plexiglass eye gaze board with the numbers for the code is attached vertically near the front of the lap tray.

To make a choice response, L. placed his hand on the quarter of the lap tray board which contained the desired symbol and at the same time stared directly at the number on the plexiglass eye gaze board which corresponds to the symbol. The listener then acknowledged the message "You want a drink", and gave L. a drink. The student was taught to use this board over a period of a year. Each part of the response and each symbol were taught separately. During early training there was only one symbol in each quarter of the board and the student was taught the color coded quartering system. Then a second symbol was added to each quarter and training began on the number code. During this initial training the student would pause after each part of the selection response for affirmation such as "You want the blue quarter", or "You want blue number two . . . book!" Now, however, the entire selection response is simultaneous.

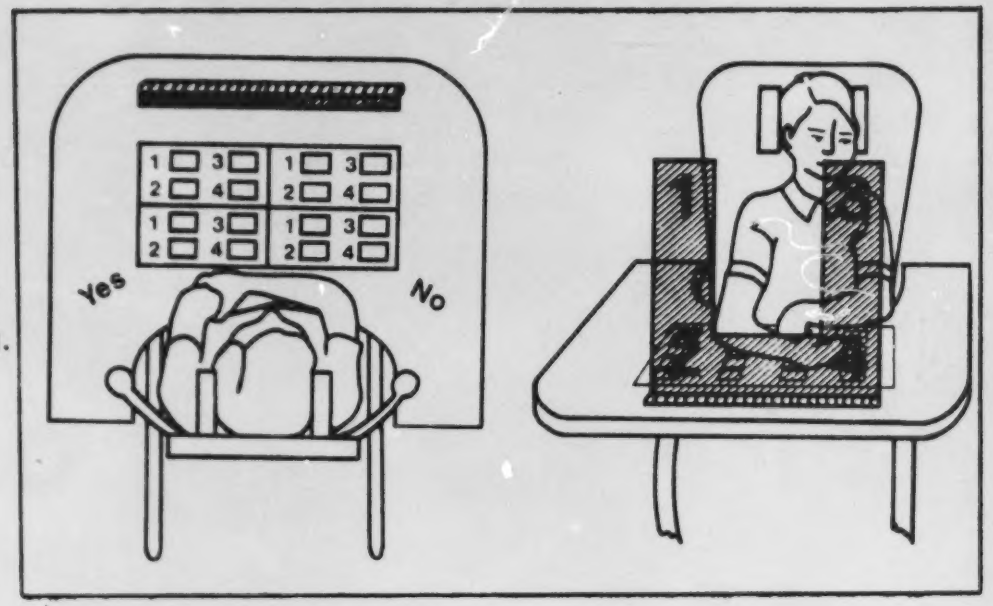


Figure 3: Top and front view of example board.

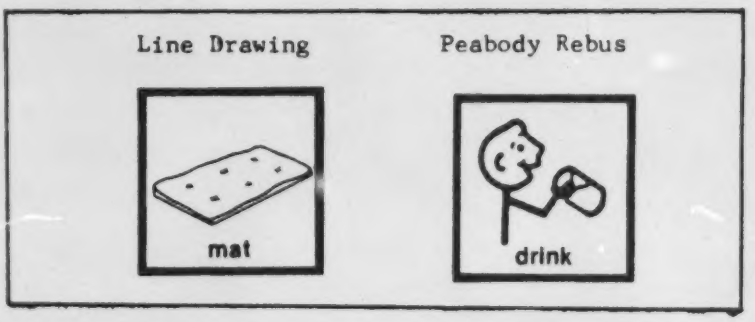


Figure 4: Symbols from example board, shown actual size.

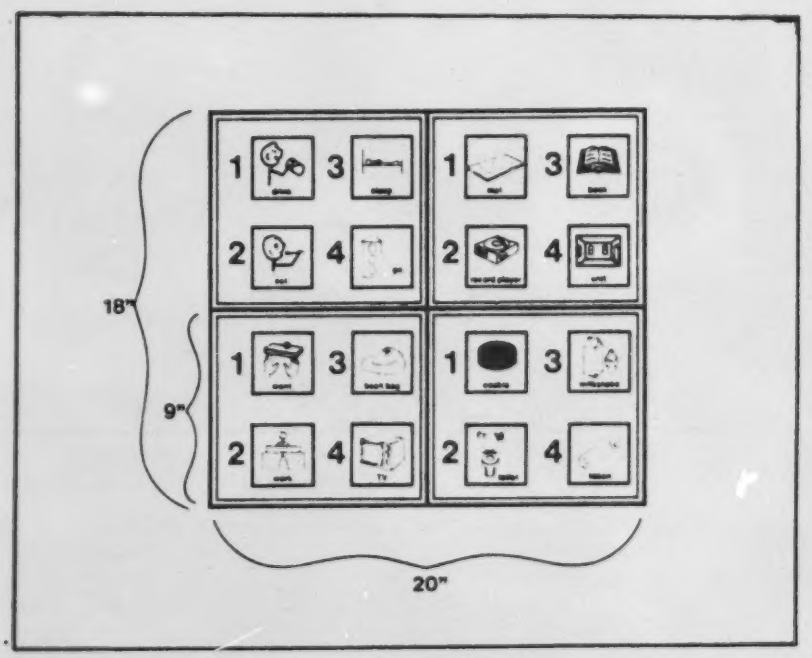


Figure 5: Example vocabulary display and board size.

Decision III: Symbol System - Combination Peabody Rebus and Line Drawings

Decision Rationale:

During probes before training began L. was able to consistently match objects to simple drawings of those objects by looking at the correct symbol out of 3 placed on his lap tray. He was unable to match in any other task. Peabody Rebus were selected as an appropriate initial system because they are very standard, simple representations. Whenever a symbol was needed which was not in the Rebus Glossary, a hand drawing representation was created. Both types of symbols were black outlines on white. Figure 4 shows two of the symbols from L's board.

Decision IV: Vocabulary Selection - Twelve Reinforcer symbols and four need symbols

Decision Rationale:

The sixteen items (shown in Figure 5) were selected for various reasons but all were words L. could use to communicate an immediate want or need. The majority of the words symbolized highly motivating objects or activities such as milk shake, eat, and record player. These were the first symbols trained. A few represented words which L. was required to use in a communicative needs situation, such as toilet and sleep.

Decision V: Vocabulary Display - (See Figure 5)

Decision Rationale:

Symbols were generally placed in an arbitrary position with action and object labels grouped together when possible. The size of the quarters of the board were determined by the area L. could point to with the most stable and consistent control. Symbol card size within each quarter was not a decision variable because the student used the eye gaze for this final vocabulary selection.

Decision VI: Board Construction - (See list below)

Materials needed to make the board were: wheelchair lap tray, plexiglass, piano hinge, colored tape, symbols cut from typing paper, pressure sensitive graphics.

Decision Rationale:

The board was attached to the lap tray of L.'s positioning wheelchair to insure it was available as much as possible. The plexiglass eye gaze board was attached to the front of the lap tray with the piano hinge so it could be lowered flat onto the lap tray during outdoor travel or activities requiring the entire tray. This minimized breakage of the plexiglass. The symbols on the colored display board were laminated directly on the lap tray with additional plexiglass.

SYSTEM MANAGEMENT

No board system will be functional if it is not available to the student to use. Boards might as well not be taught if they spend most of the day in a closet, or on a book shelf, or leaning against a table. The classroom staff must be committed to keeping the boards with the users. Admittedly, this is a difficult management problem. Below is a list of suggestions which may make this task easier.

Train functional content. Staff and parents will be more likely to have the child use the board if its symbols pertain to routine daily activities which the child wants to communicate about. For example, some boards may have symbols referring to colors, and numbers. However, severely multiply handicapped children rarely want or even need to communicate about numbers or colors. When more functional symbols are taught (foods, comfort items, etc.) it becomes more logical to use the board throughout the day.

Use the board routinely. This may seem like an obvious suggestion, but it is an important one. If functional symbols have been taught on the board using this curriculum's board objective, teachers and parents should routinely require board communication during their interactions with the child during other times also. Communication and board availability go hand-in-hand for these students. As a general rule, they can't have one without the other.

Identify a standard storage area. All board users have times when it is not feasible for them to have their boards with them. When this occurs, decide where the board should be stored. The next step is to then insure that it is placed there whenever it's not in use!

Teach instruction following. If the child is ambulatory (with or without a prosthetic device) it may be possible to teach him/her to follow the instructions "Go get your board", or "Put your board away". Obviously, a standard storage area is quite important to this task.

Make multiple boards. If the student cannot be taught to get or carry the board, and if the board cannot be attached to a wheelchair or walker, consider making several identical boards to be stored in frequently used areas of the school and home (e.g., gym, music room, etc.).

Assign responsibilities to staff. The classroom staff may share on a routine schedule (daily, weekly, etc.) the responsibility of making sure the boards are in good repair and available. Only one person needs to attend to the student's having their boards at any one time. However, that one staff member is likely to carry through the assignment, first because it is a defined task and second because the other staff in the room know who to blame if the boards are not there.

Use an interval timer. Although this may seem disruptive, it may be a way to remind staff of the importance of board availability for a short time during initial training. Set a timer to ring every 20 to 30 minutes. At the end of each interval, take a quick glance around to make sure all boards are available to their users.

FACILITATOR PROGRAM FOR VOCABULARY EXPANSION

The REQUESTING THROUGH COMMUNICATION BOARD objective teaches the functional use of communication boards. As the student's vocabulary increases through that objective, additional training may be necessary to facilitate the student's discrimination and understanding of the expanded symbols. If programming time is available for training beyond the "Requesting through Board" objective, this facilitator program may be helpful:

Phase I: Matching Object to Symbol

GOAL: The student will match an object to a symbol[1] of that object.

RATIONALE: The purpose of Phase I is to expand the student's expressive labeling vocabulary.

I. Description.

Phase I teaches a cognitive and semantic skill that will assist in assuring that the child is discriminating the actual symbol used. Procedures differ from those of the curriculum's objectives primarily in that the training setting for this facilitator program can be isolated and training may occur with mass trials if desired.

II. Procedures.

A. Before beginning training in this Phase, be sure the symbols to be taught have previously been used in the "Requesting through Communication Board" objective.

B. Select two noun symbols on the student's communication board. Have both objects present during training. Pick up one of the objects and ask "What's that?". The student should point to the symbol for that object. Randomly present the items during training and train to criterion.

[1]The "symbol" may be any of the systems described earlier. Regardless of whether pictures or printed words are used, the procedures for this facilitator program remain the same.

C. Select two additional noun symbols on the student's board. Train these two new objects to criterion using the same procedure.

D. After the student has met criterion on these two items, train all four items together. All four items will be present during training. Hold up one of the four items and ask "What's that?". Remember to present the items in a random order.

When the student has met criterion of the four objects together, go to Phase II.

Phase II: Spoken Word to Object

GOAL: The student will match the spoken label for an object to the actual object.

RATIONALE: The purpose of Phase II is to expand the student's receptive labeling vocabulary.

I. Description.

This training is done very similarly to Phase I, except that the student points to the acutal object and does not need the board for the response.

II. Procedures.

A. Place two of the four items which you used in Phase I in front of the student. Tell the student to "Show me (one of the items)". The student should point to or pick up the requested item. Randomly request the items in a random order. Train to criterion.

B. Train the two other items used in Part I to criterion.

C. Place all four items in front of the student. Tell the student to "Show me (one of the items)". Remember to request the items in a random order. Train to criterion.

When the student has met criterion on Phase II, begin training on Phase III.

Phase III: Board Symbol to Object

GOAL: The student will match the board symbol for an object to the actual object.

RATIONALE: The purpose of Phase III is to expand the student's receptive labeling vocabulary, matching the symbol to the object.

I. Description.

The teacher will need to use the student's board for Phase III training. The student does not use his board in this training.

II. Procedures.

A. Place two of the four items used earlier in front of the student. Point to the symbol for one of the items on the student's board. Do not say the word. The student should point to or pick up the item which corresponds to the symbol. As earlier, present the trials in a random order and train to criterion.

B. Place the other two items in front of the student. Use the same procedure and train to criterion.

C. Place all four items in front of the student. Use the same procedure and train to criterion.

When the student has met criterion in Phases I, II, and III you may begin training on new symbols, following the same procedure. Be sure to only expand using symbols which have been taught first in the board objective.

For an expanded, more detailed presentation of this facilitator program, refer to the Waldo, et.al. reference listed below.

REFERENCES

Electronic Boards

Nonvocal Communication Resource Book, edited by Gregg C. Vanderheiden (1978). Available from University Park Press, 233 East Redwood Street, Baltimore, Maryland 21202. This is a reference book listing addresses, price, and availability of communication aids.

"Assessing Non-oral Clients for Assistive Communication Devises" by Colette Coleman, Albert Cook, and Lawrence Meyers. Published in Journal of Speech and Hearing Disorders, XLV, November, 1980, pages 515-526. Article has an appendix "Matching the physical and language capabilities of a disabled client to the corresponding characteristics of a communication device".

Response Identification for the Physically Handicapped Student

"Adaptive Equipment for the Severely Multiply Handicapped Child" by Karin Barnes, Nina Murphy, Lois Waldo, and Wayne Sailor in Teaching the Severely Handicapped, Volume IV (editors Robert York and Eugene Edgar). This book is available from Special Press, 724 South Roosevelt Avenue, Columbus, Ohio 43209.

Overview of Boards

Nonvocal Communication Teachniques and Aids for the Severely Physically Handicapped, by Gregg C. Vanderheiden and Kate Griley. Available from University Park Press, 233 East Redwood Street, Baltimore, Maryland 21202. This book is an excellent general introduction to boards and gives many examples of actual boards used by physically handicapped students.

Symbol Systems

Standard Rebus Glossary by C. Clark, C. Davies, and R. Woodcock. Available from American Guidance Service, Inc., Publisher's Building, Circle Pines, Minnesota 55014.

Handbook of Blissymbolics, by B. Kates, S. McNaughton, and H. Silverman. Available from Blissymbolics Communication Institute, 862 Eglinton Avenue East, Toronto, Ontario, Canada M4G 2L1.

Facilitator Program for Vocabulary Expansion

Functional Communication Board Training for the Severely Multiply Handicapped by L. Waldo, P. Riggs, K. Davaz, M. Hirsch, R. Eye, and A. Marshall. Available from Kansas Neurological Institute, 3107 West 21st Street, Topeka, Kansas 66604.

APPENDIX E

SELECTING A PRIMARY COMMUNICATION MODE

The purpose of this appendix is to provide general guidelines for selecting a primary communication mode for a severely multiply handicapped child. This decision is not relevant unless or until a child exhibits the communicative skills described in the "Requesting Through Choice" objective of the curriculum.

Mode selection is not a science. The guidelines are not a rigid set of decision rules. Each must be weighted as it applies to the individual child being assessed.

The mode selection process for this curriculum is based on the following assumptions:

1. Many severely multiply handicapped students do not possess the primary "communication" skills necessary to warrant teaching them symbolic speech, signing, or board use.

2. Although speech is the most normal of all communication modes, severely multiply handicapped students commonly are not able to use understandable speech.

3. Signing is often not a functional communication mode for a nonspeech student either because the motor skills required are too refined, or because the environment neither uses or understands the signs.

4. A communication board is frequently the most preferred initial mode for the severely and profoundly delayed students, not only because it requires a simple motor response but because it allows a very concrete system of representation, i.e., pictures.

PROCEDURES AND CONCERNS

The decision to concentrate on a particular mode will affect the student's daily living far into the future. Therefore, the selection of a communication mode is a critical decision which must include careful study of the student's skills and consultation with the important people in the student's environment. Information and feedback should be gleaned from as many sources as possible, including the parents or primary caregivers. Whenever possible the teacher, speech pathologist, psychologist, and physical or occupational therapist should also assist in the process.

Table 1 lists an assessment strategy which should ultimately provide the team with the information necessary to select a primary communication mode. Table 2 lists the decisions which must be made during the assessment process.

Mode selection is rarely a clearcut process. The procedures and considerations listed in the tables are not intended to be exhaustive. Specifically, the decision rules in the far left column of Table 2 are meant simply as guidelines. The tables are intended to convince the readers of the involved nature of the decision, and of the general direction the decision process should take. For an extended discussion on both of these topics, refer to the Total Communication Checklist and Assessment (TCCA) by L. Waldo, K. Barnes, and G. Berry (available from Kansas Neurological Institute, 3107 west 21st Topeka, Kansas 66604). The TCCA provides very specific assessment techniques and detailed discusssions of the decision process.

PARENTAL INVOLVEMENT: A FINAL NOTE

The parent's preference must carry much of the weight for the mode selection decision. If the parents are not invested and supportive of the system chosen, the communication programming will fail. Parents will be more supportive and invested when given the opportunity, encouragement and information to be involved in the earliest stages possible of the decision process.

Some parents have difficulty accepting the decision to use an alternate communication mode. They may view nonspeech communication as too artificial. Or they may be concerned because they think that because a nonspeech system is being considered, their child has failed in some way. Other parents may not see the difference between talking and communicating. The CCC Parent's Guide discusses this issue specifically. The comments similar to those below may be beneficial for the parents to hear.

"I know it may seem to you as if your child has failed. This is simply not so. What we are saying is that your child has a <u>good</u> potential to communicate. With this training your child can become successful in his/her attempts to express him/herself".

"Communication is a necessary skill for independence. Teaching speech may take years. By providing your child with a nonspeech communication system, he/she will have a chance at some of that independence much earlier".

"It simply isn't true that you have to talk to communicate. All of us use nonspeech communication daily when we write, applaud a performance, point out an article in the paper for our husband to read, or simply frown when our child misbehaves. The point to remember is that communication is more important than talking".

TABLE 1

Assessment Strategy for Mode Selection

Task	Purpose
Interview parents during a parent conference or preferably during a home visit.	Identify current skills; explain mode alternatives. Determine parental preferences.
Observe child in spontaneous functional communication setting.	Identify child's current communication strategies, Determine spontaneous vocal and motor skills.
Directly test selected skills.	Clarify discrepancies between observed and/or reported skills. Probe skills which did not occur during observation or which require further definition.
Review educational and training records.	Determine past training successes and failures. Identify previous training in any of the modes.
Conduct diagnostic training over a short period of time.	Clarify any remaining questions of skill. Resolve any differences of opinion among team members about skill level.
Conduct a group meeting with parents and involved professional staff.	Summarize and interpret assessment data. Obtain group concensus to select most preferred communication mode.

TABLE 2

Variables Involved in Mode Selection

DECISION	PRIMARY CONSIDERATION	DECISION RULES
I. Is the student ready for symbolic communication training?	A. Have several high-preference (reinforcing) objects, foods, or activities been identified for this student?	The student is ready for symbolic training only if the answer to all three of these considerations is "yes".
	B. Does the student currently have some type of "choice" response which is used to request his/her basic wants and needs?	
	C. Does the student show any generalized and/or spontaneous use of the communicative responses he/she currently possesses?	
II. Is speech the preferred communication mode?	A. Has the student made good progress in previous speech training?	The student is a likely speech candidate if most of these questions were answered "yes".
	B. Does the student express basic wants and needs effectively by talking?	This student is not a good candidate for speech if A, D, or E were answered "no".
	C. Does the student have normal hearing either with or without a hearing aid?	
	D. Does the student closely imitate spoken words?	
	E. Are the student's receptive skills equal to his/her expressive skills?	

TABLE 2

Variables Involved in Mode Selection
(Continued)

DECISION	PRIMARY CONSIDERATION	DECISION RULES
III. Is signing the preferred nonspeech mode?	A. Would the student's environment readily support and use signing?	The student is a likely signing candidate if most of these questions were answered "yes".
	B. Is the student able to use both hands freely?	This student is not a good candidate for signing if B, D, or E were answered "no".
	C. Does the student spontaneously use hand gestures to communicate?	
	D. Will the student allow someone to manipulate his hands into sign configurations?	
	E. Does the student closely imitate simple manual signs?	
IV. Is a communication board the preferred nonspeech mode?	A. Would the student's environment readily support and use a board.	The student is a likely board candidate if most of the questions were answered "yes".
	B. Does the student exhibit only very low level cognitive skills in matching, memory, visual scanning, and object use?	
	C. Is the student unable to imitate most fine motor movements?	
	D. Does the student exhibit restricted motor skills generally?	
	E. Is the student motorically and communicatively passive?	

"Learning to say words and sentences clearly may take your child years. Some students have received daily training over a very long period and are still not able to talk so that a stranger could understand. Your child has the potential to be a good communicator if we don't hold him/her back waiting for better speech".

SUMMARY

A child's prognosis for speech, or placement in either signing or board training, is not established once and for all at any time. Continued attention to the child's speech and to training data will indicate whether the decisions made were valid for that student.

APPENDIX F

RESPONSE DEVELOPMENT AND DATA COLLECTION

This appendix briefly reviews two topics: response development, and data collection and analysis. Teachers should understand that this curriculum assumes basic knowledge of principles of behavior modification, and makes no attempt to train those skills here. If teachers do not have these skills, they are referred to the list of references at the end of this appendix.

The suggestions and comments included in this appendix are based, in part, upon the authors experiences and preferences. It will be up to each teacher, ultimately, to determine the best procedures and data collection techniques for his or her own classroom.

DEVELOPING A RESPONSE

At the beginning of communication training, a student's ability to perform a given target behavior may range anywhere along a continuum. For example, the student may be able to make only a limited approximation of the desired response, or he may be able only to imitate the response. Some may on occasion produce the correct response, but not in response to the appropriate stimulus. At any point along this "accuracy continuum" there are techniques which the teacher can use to build upon the student's existing skills in order to develop the desired communicative behaviors. Generally, these techniques involve prompting and shaping.

Prompting

There are several types of prompts which can be used to develop a response. These are discussed below.

Verbal Cue. A verbal cue is a prompt which gives a cue to the student that he is supposed to respond in some way, but does not directly tell the student how to respond. Verbal cues are often in the form of questions, such as "What do you want?", or "Do you want more?, tell me". The successful use of a verbal cue depends upon the student's receptive language skills, i.e., the student must be able to understand the cue.

Verbal Prompt. A verbal prompt actually tells the student the response he is to make. Use of a verbal prompt also requires that the student have sufficient language comprehension to understand the instructions, e.g., "Make the sign for drink", "Point to the cookie", etc.

Physical Prompt. A physical prompt requires the teacher to interact physically in some way with the student. Physical prompts may range from a slight touch (e.g., the teacher may touch a child's elbow as a prompt for pointing), to a complete physical "put-through" of the desired response (e.g., the teacher may actually position the student's hand and fingers into the proper sign for "drink"). Physical prompts (as with all prompts) must be "faded" so that the teacher's physical assistance is gradually reduced, and the student is required to perform the target behavior with greater and greater independence.

Modeling. Modeling is a prompt in which the teacher shows the student what to do by demonstrating the target behavior, e.g., the teacher points to the cookie, or makes the sign for drink, etc. The success of modeling as a response development technique depends upon the student's imitative skills. The imitative model is frequently paired with a verbal prompt when a motor response is being taught, e.g., the teacher may say "Point to cookie" as she models pointing to the cookie.

Shaping

Shaping is a teaching procedure which systematically reinforces closer and closer approximations to the desired response. This may be done with or without the use of prompts. For example, a child who is unable to imitate a vocal model may be shaped into producing a particular sound by reinforcing those vocalizations which are closer and closer to the desired sound. There are some cases where no prompts are available to help shape the response; however, shaping without the use of prompts is generally much more time consuming.

NOTE: Regardless of which technique is used (prompting or shaping), the student must ultimately respond independently. In order to facilitate this, the teacher must continually fade any prompt as quickly as the student's skills allow.

The example below demonstrates a shaping procedure which employs the use of gradually faded physical prompts.

Example

When a high-preference food item is presented to John he reaches to grab it. The teacher wants to teach John to make the sign for food:

1. *As John reaches for the food, the teacher takes his hand and moves it into the sign configuration for food, and directs the hand to John's mouth. As John becomes familiar with the sign, and does not resist the prompt, the teacher probes to determine John's readiness for step 2.*

2. *As John reaches for the food, the teacher shapes his hand into the food sign, as in step 1, then gently pushes his arm as a cue for John to lift his hand to his mouth to finish the sign. Thus, in this step, John must independently complete the sign by bringing his hand up to his mouth. When John does this consistently, the teacher moves to the third training step.*

3. *As John moves his arm toward the food, his teacher touches John's fingers as a cue for him to form the correct hand configuration, or John shapes his hand correctly, then brings his hand to his mouth as trained in step 2. When John responds correctly and consistently, the teacher can eliminate the touching prompt completely (step 4) and John will have been trained to make the sign independently.*

It is important to note that for a different student, the above four steps may have been collapsed into fewer or expanded into more steps, depending on that student's learning pattern and abilities. Shaping steps must be individually determined for each student.

DISCRETE TRIALS

Before starting to take data on a particular response it is necessary to make a number of decisions. The following decisions should be made; 1) when the data will be recorded, 2) what a "trial" will consist of, 3) what the consequences will be for each type of response the student makes, and 4) what type of scoring system will be used.

When these decisions have been made the program may be started. It is important to keep in mind that data must be recorded in a consistent manner, and prompts and cues should be recorded accurately. A trial should consist of only one opportunity to respond and may include a single prompt or cue. Providing repeated cues and prompts, then recording as though a single trial has occurred, does not accurately reflect the student's performance and is of relatively little use. Also, data should be recorded as quickly as possible during the actual training. Teachers should not rely on memory to record data after a training session.

DATA COLLECTION

In some instances a student's progress in a particular program may be obvious. In most cases, however, it is necessary to have a "picture"-- i.e., a graph-- representing the student's learning curve in order to make optimal programming decisions.

There are several issues relevant to data collection which cannot be discussed in detail here. Several decisions regarding data collection will be determined by the characteristics of each program. It is important that teachers not be locked into a particular data system. All too often teachers design only programs which can easily fit into an existing data system. The data collection should be determined by and appropriate to each program.

Frequency of Data Collection

Generally, the more frequently data is collected, the more information there is available on the student's performance. "Continuous" data collection is a direct measure of a particular behavior every time it occurs. However, there are both advantages and disadvantages to the use of continuous data collection. Continuous data collection allows a fairly exact measure of the behavior. The disadvantages of continuous data collection are the amount of time involved, and the incompatibility of recording data and interacting with students at the same time.

"Probe" data collection measures only some of the occurrences of a behavior. Probe data can be taken in a variety of ways. If a particular program, such as teaching a pointing response, is run in massed trials of ten each day, then data could be taken on all ten trials every other day, or five of those ten trials three times a week, etc. If a situation for a particular response training is set up four times each day, data may vary among all situations so the data will be representative.

Probe data collection frees the teacher to spend more time interacting with the student. The main disadvantage is that less information is available on the student's performance. The following are suggested guidelines for use of continuous versus probe data collection:

Use continuous data collection when:

1. Teaching a new student
2. Teaching a new skill
3. Student is having difficulty acquiring skill
4. Student's performance is variable
5. Student has frequent seizures, or is changing medication.

Use probe data collection when:

1. Continuous data are not necessary
2. Conducting assessments
3. Testing for generalization of a skill
4. Probing ahead of the skill level presently being taught.

It is important to have a data based program, not a data bound program. The collection of data should not interfere with the frequency or quality of teaching, nor should the teacher collect more data than is necessary for program evaluation. As stated above, the program itself should come first, with the data collection system designed for that specific program. It may be possible that one data system can be used with more than one program, but the teacher must not be committed to using only one type of system.

INSTRUCTIONS FOR GRAPHING

Once data have been recorded from training programs, it can be displayed visually using a graph. A graph makes it much easier to spot problems in the programs, and to see improvement over time. Almost any type of data, whether it is rate, frequency, or percentage data can be graphed. There are a few general rules to follow when graphing any type of data:

1. Information identifying the period covered by the graph, the student's name, trainer, and objective, should be included on each graph.
2. The graph should be drawn in pencil so it can be easily corrected.
3. The symbols used must be easily read.
4. There should be a key providing the meaning of the symbols used.
5. The graph should have room to display at least one month's data.
6. Each program should be placed on a separate graph.
7. Data should be graphed regularly.
8. The vertical axis should indicate the rate of level of the behavior and the horizontal axis should indicate time. (See Figure 1 below). This axis may contain days, sessions, etc.

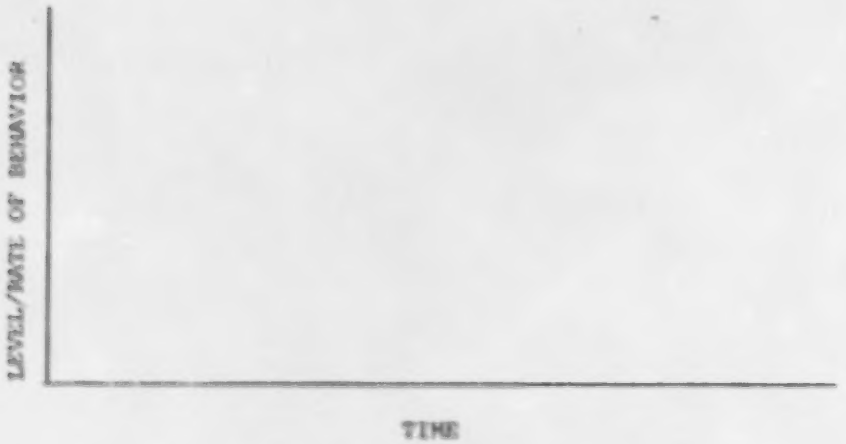


Figure 1: Vertical and horizontal axis of a graph.

9. Both axis should be labeled (see Figure 2).

Figure 2: Labeled Axis of a Graph

10. Each point within a condition should be connected with a line. When a change is made in the program, the data should be separated with a dotted line.

If no data are taken for one or more days, no points should be plotted and no line should completely connect the points. The number of days no data were taken should be recorded in the broken line. Include only those days where data is normally taken. Do not include weekends for programs conducted only on school days. Figure 3 shows a sample graph indicating most of these points.

Figure 3: Sample Graph

Name: Robert

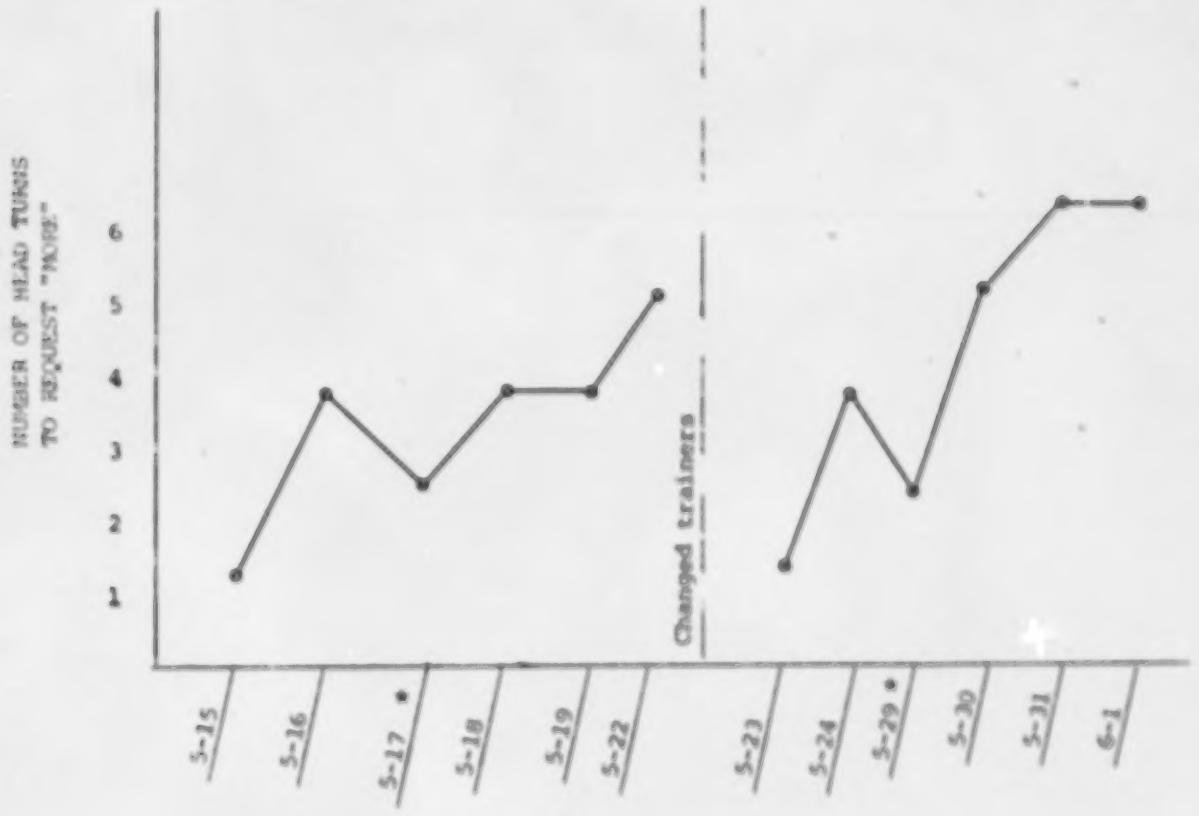
Dates: 5/15/80 - 6/1/80

Trainer: Chris, Sylvia

Program: Request for "More"

Objective: Robert will turn his head for more juice

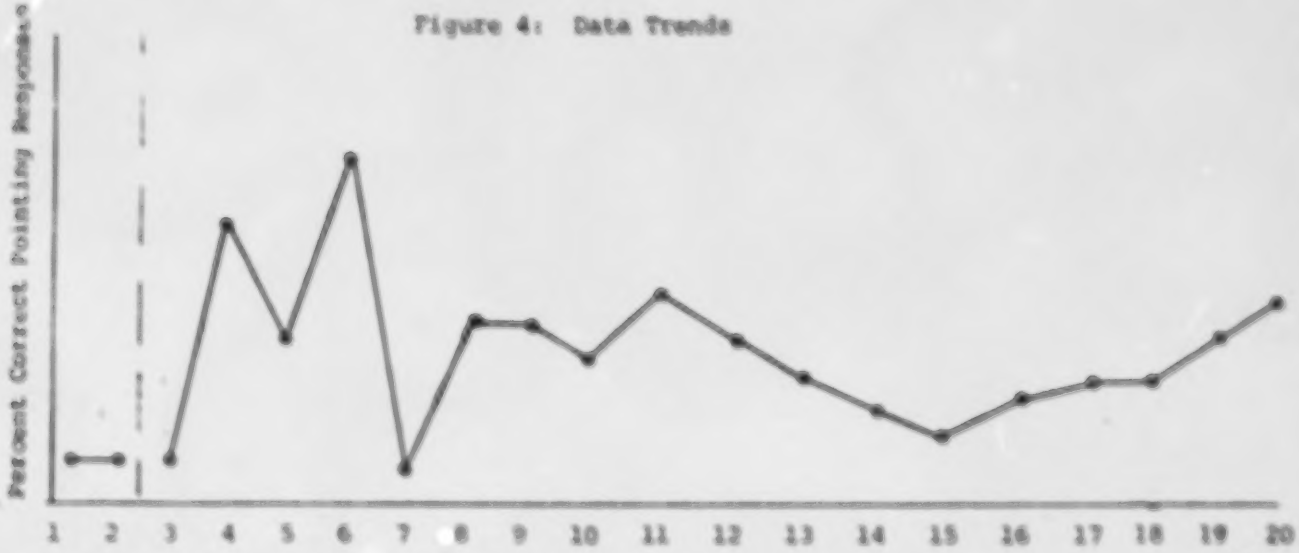
Prompt: Lightly touch side of his head.



INSTRUCTIONS FOR GRAPH/DATA ANALYSIS

Once the data have been graphed they can be used to evaluate the student's progress. It is more helpful to look at trends in the data than to look at individual points. If a student is being trained to make a particular response, (as opposed to eliminating a particular behavior as in a behavior management program) data which are increasing suggest that the student is learning the response and no change is necessary unless the student has met criterion. If the data are decreasing, fluctuating (variable), or stable (showing no change), and below the set acquisition criterion, then some modification may be necessary to facilitate improvement. Figure 4 shows an example of how these trends would actually look on a graph.

Figure 4: Data Trends



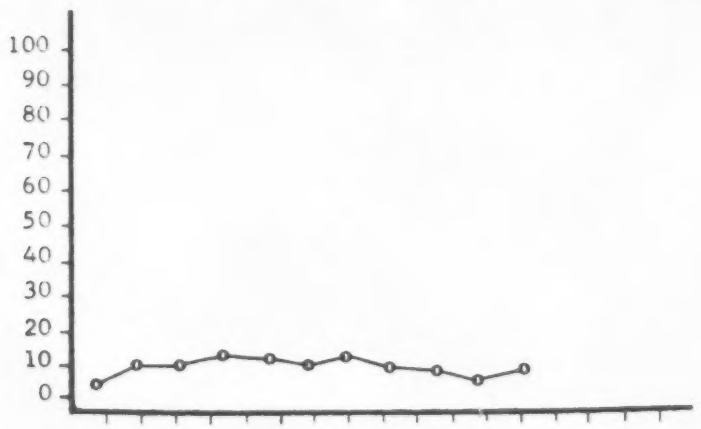
Sessions	Trend
3,4,5,6,7 -	fluctuating data
8,9,10,11,12 -	stable data
11,12,13,14,15 -	decreasing data
15,16,17,18,19,20 -	increasing data

Identifying Problems and Making Program Changes

As stated earlier, the purpose of data collection is to monitor the child's progress. In order to effectively monitor this progress, program data must be kept up-to-date. Only when the data are graphed will it be possible to determine if progress is being made. If a student is not making progress in a particular program, a change should be made.

Possible reasons for poor progress are presented in this section, along with sample graphs. Obviously, there is no one-to-one correspondence between a particular graph configuration and the "reality" which it reflects. However, data trends or configurations are often suggestive of particular programming problems. Several examples are presented below.

Example #1: The "No Progress" Graph



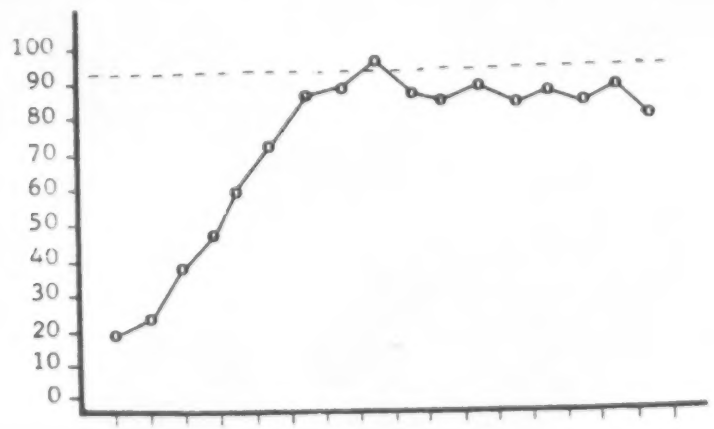
It is obvious that the student represented by the data above is not learning the task. There are several possible reasons why a student may not be learning a given behavior. The most common of those will be briefly discussed below:

Inadequate Reinforcer. In the CCC Program, the first question the teacher must ask when a child is progressing poorly is "Is the reinforcer truly a high-preference item or activity?" (See IDENTIFICATION OF WANTS AND NEEDS section of Communication Guide.) The graph shown above would indicate that the reinforcer being used actually has no reinforcing strength at all. This is a programming error which is very unlikely using the CCC Program because of the program's strong emphasis upon identification of high-preference reinforcers.

Task Difficulty. The above graph configuration may also suggest that the particular behavior selected for training as a communicative behavior is much too difficult for the student. The "Response Selection" discussion in the REQUEST TRAINING section of the manual should provide guidelines which help avoid attempting to train a behavior which is extremely difficult for the child to learn.

Poor Shaping Techniques. There will be many cases where the student is low-functioning and has a very limited response repertoire. The teacher may have followed the "Response Selection" guidelines to the extent possible, but still the student may be unable to demonstrate significant progress. In these cases, learning may depend greatly upon the shaping skills of the teacher. The response to be trained must be carefully analyzed and broken down into small shaping steps. In such cases, the graph above may suggest that steps may have been inappropriately large, fading of prompts may have been done improperly, etc.

Infrequent Training. If the student is frequently absent, or if the training is conducted inconsistently, or if the student has only a few opportunities to learn the skill each day, it may be necessary to rearrange the classroom schedule to increase training time. Most severely handicapped students require a great deal of practice before a skill is mastered. It may be necessary to increase the number of days per week the program is run, or the number of trials presented in each training session, etc.

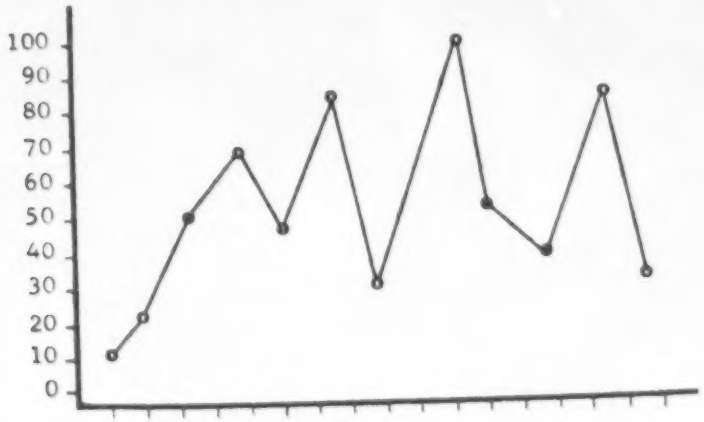


Example #2: The "Almost Criterion" Graph.

Teachers must keep in mind that there is no magic criterion that best defines the point at which a behavior has been learned. Criteria are set merely as a performance "ideal" to which the child's actual performance can be compared. Acquisition criteria may vary depending upon the student, the behavior being trained, the training situation, etc. The graph above suggests that the 95% two days in row criterion which was set for this student was simply too high. It is obvious that the student was able to learn the behavior, and consistently maintain it at a fairly high level. It has been frequently observed in developing the CCC Program that when a criterion is too high, eventually the student's performance will begin to deteriorate. While it is very important to determine that the student

has actually learned a response by setting an acquisition criterion, it is equally important that programs be changed quickly once the student has learned the behavior.

Example #3: The Fluctuating Graph



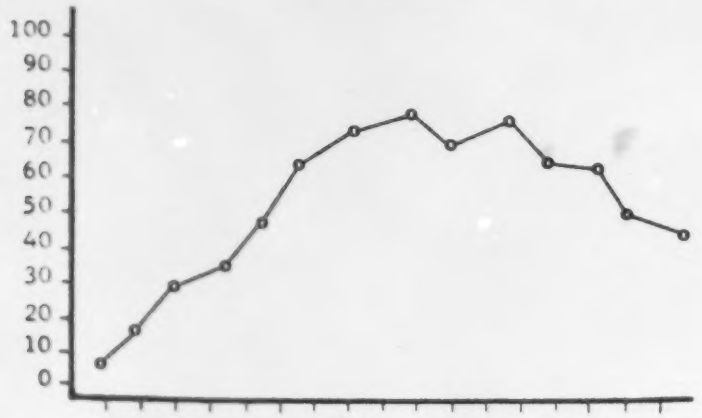
The graph above reflects very inconsistent performance. Because the student's performance is sometimes at a very high level, it can be assumed that the task is well within the student's capability. There are, however, other possible explanations for this student's inconsistency:

Inconsistent Reinforcer Strength. Some high-preference items or activities are only effective reinforcers at certain times or under certain conditions. For example, juice may only be an effective reinforcer for a particular child when he is very thirsty. The data fluctuations may simply represent whether or not the student had received liquids just before training.

Illness or Medication Effects. Data fluctuations may also reflect internal states of the student which influence the student's ability to perform. Seizures, illness, and medications can have a great effect on performance. When data fluctuations are observed, it is important to chart such variables on the graph along with the child's performance. Eventually a correlational pattern may emerge which will explain the inconsistent performance.

External Variables. Any intermittently occurring event may affect a student's performance. For example, some students perform well for one trainer, but not for another. Others are able to attend to the task better when there are fewer distractions, etc. Again, recording these conditions on the performance graph may provide important information.

Example #4: The "Worn-out Reinforcer" Graph.



In the graph above, the student showed steady progress early in training, then gradually his performance begins to deteriorate. Often this data configuration is associated with a reinforcer which, while effective initially, has lost its strength over time. When reinforcers are not varied, students are easily satiated. Teachers often forget the fundamental truth in training the severely handicapped: As the strength of the reinforcer wanes, so does the student's performance. When such a data trend is observed, if the student is one for whom there are few identified reinforcers, the priority goal for that student should not be REQUEST TRAINING, but IDENTIFICATION OF WANTS AND NEEDS.

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